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JUNE, 1921
VOL. XIV
No. 1
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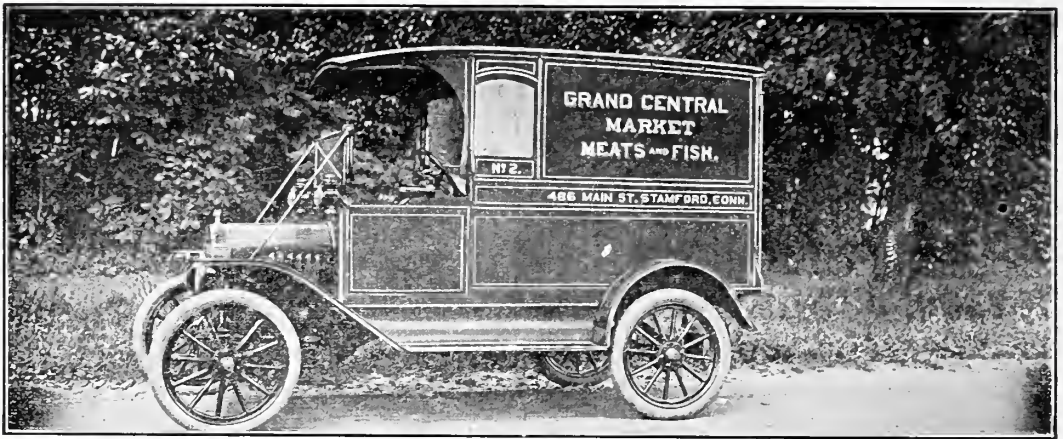
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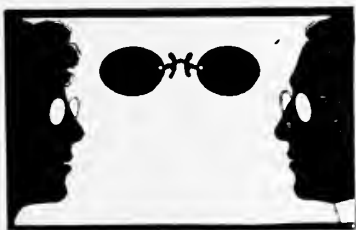
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PUBLISHER'S NOTICES

'Tis not in mortals to COMMAND success, but we'll do more, we'll DESERVE IT.—Addison.

Advertising Ostermoor Mattresses.

It is but justice to Ostermoor & Company and to its genial manager, Mr. Edwin A. Ames, that we say a kind word of appreciation of the Ostermoor mattresses which have been thoroughly tested at our Rest Cottage of Little Japan. Guests and students have spoken in delight of the good night's rest among the trees, well fitting them to carry on their nature studies and to enter heartily into all the activities of ARCADIA. Two more mattresses recently received will be put into use at once.

We call attention to the Ostermoor advertisement in this number of our magazine and invite our Members and friends to obtain full particulars of these high grade mattresses, cushions and springs. Much of one's time is spent in bed and the work done in the remaining hours depends largely on how restful are those hours in bed. It does not pay to have anything short of the best, and the best are sold at very reasonable prices.

More Roses Needed!

A shy young man had been calling on "the sweetest girl in the world" for many months, but, being bashful, his suit had progressed slowly.

Finally she decided she ought to set things going, so the next time he called she pointed to the rose in his coat and said, "I'll give you a kiss for that."

A crimson flush spread over his countenance, but the exchange was made. Then he grabbed his hat and started to leave the room.

"Where are you going?" she asked in surprise.

"To the—er—florist for more roses," he called back from the front door.

Cinnamon Vine Sensation.

Really the interest aroused among our readers by the full page announcement and the two page article by Mr. A. T. Cook of Hyde Park-on-the-Hudson, New York, telling of the wonders of cinnamon vines might be described as a cinnamon sensation. Many have hailed his announcement with delight and are glad to know what is one of the best vines for verandas, trellises and rustic work.

This wonderful vine is not in the experimental stage but has been thoroughly tried out and found to be worth while. We can strongly recommend correspondence with Mr. Cook regarding it.

Putting in Personality.

Jean, the negro chef at a certain country club, makes hash that has no equal. The fame of the dish is great, but the secret of its excellence eluded everyone until one day a member of the club complimented Jean on his skill.

"How do you do it?" he asked. "I never get hash like yours anywhere else."

Jean's black face glowed with pleasure at the compliment. "Beef is nothin'," he replied, "potatoes is nothin', pep-pah's nothin', onions is nothin'; but when I frowes myself into de hash—dat's what makes it what it is!"—Youth's Companion.

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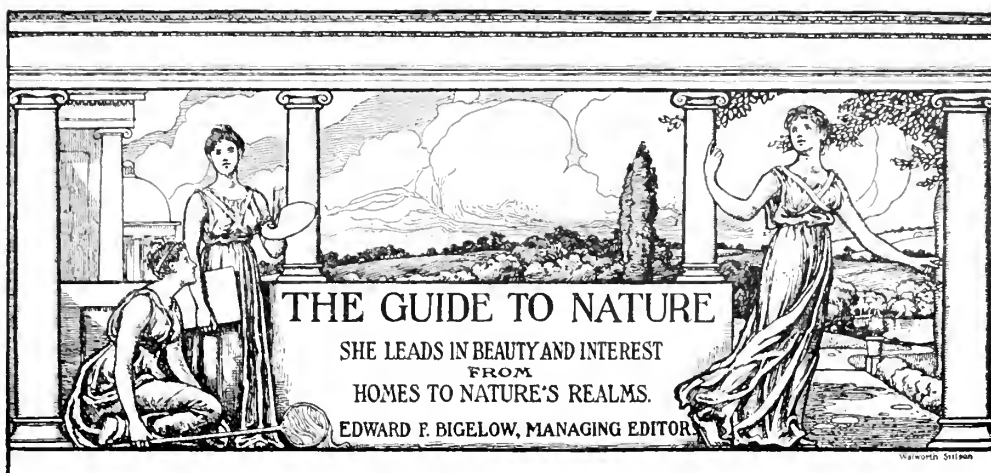
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JUNE, 1921

Number 1

Rabbit Tales.

By Clifford E. Davis, Cumberland, Maryland.

In passing through a thick forest after a heavy fall of snow I saw before me the cross trail of a fleeing rabbit. He was advancing with terrific leaps inspired only by fear; far back in the woods I heard the baying of a hound. Knowing that in the deep snow the game could not go far before being caught, I struck after it on the run. The trail crossed a streamlet, and up the opposite hillside, steep as a roof. Up I scrambled, falling, slipping, pulling myself up by weeds and bushes, till I reached the top, where the rabbit went into an old peach orchard full of tangled vines. Here I could go faster. I dodged, ducked and ran. On through a strip of timber, out into an old hillside field. The rabbit's jumps were growing shorter, the trail fresher. Then the tracks ceased abruptly. There was no sign of the rabbit. I looked carefully, far and wide, but not another track could I discover. I was frankly puzzled. Where had that rabbit gone? Finally I looked closer at a tiny brown spot in the snow that I had observed before but had mistaken for a bunch of dead leaves, lying to one side four feet from the tracks. There I found bunny buried deep in the snow, head and all. As I hauled him out we both panted. Its heart was throbbing with fright and

fatigue, but I stroked its fur and talked soothingly to it. After a few struggles it rested quietly. I took it home, put it in the chicken house and that evening turned it loose. A hunter asked me, "Why the d— I didn't you kill it?" After saving its life I preferred to see it go free. Next day I passed that way again and saw where a dog had plunged along on the trail, hunting for himself and in the closed season. He would have had the little creature if I had not cut in ahead and saved its life.

Hunters chasing a rabbit lost it near my house and it dived into a ditch, swam under water into my milk house, and when I entered it was sitting by the door. It plunged into the water, swam to the wall and tried to leap up to a shelf but fell back. I caught it and set it outside the door and away it went to safety.

One used to come every day all summer and sit outside my window under a rosebush, asleep, despite the cat that sat in the window five feet from it and the dog that barked in the other yard. About sunset it would awake and go out for food. As there was poultry netting all around the yard it was safe from dogs, but one day before the open season a neighbor called on business and I heard him shoot within a

stone's throw of the house. When he came in the dog kept sniffing eagerly at his coat pocket and he looked uneasy. The rabbit never returned and I have my suspicions. To some men their stomach takes the place of a heart.

Another big rabbit came close around the house frequenting a tree of Fall Rambo apples. Early one morning I was aroused by the shrieks of a rabbit in pain, and jumping out of bed I saw a huge hawk just sailing out of sight. A few scraps of torn fur were all that was left to mark the tragedy and this within pistol shot of the house. The offer of a quarter brought me the hawk's body, however, which as a fitting revenge I boiled for the cat.

All last winter I kept two apples in a sheltered spot and a rabbit that lived under my house came out each night and ate them. After nightfall as we sat reading we would hear it romping about under the floor and next morning the garden bore witness in the snow to the rabbit's moonlight capers. Sometimes we could sit at the window and watch it frolic. When the snow disappeared it left for the uplands.

Though I have lived on a farm ever since my birth, fifty years ago, and like rabbit meat, I have never yet killed a bunny. When I caught them in the snow by hand and they begged for life I turned them loose. To shoot one seemed unbearably cruel. Application of the Golden Rule would prevent much cruelty and would and should prevent all mob law.

The Challenge of the Ruffed Grouse.

BY W. H. H. BARKER, M. D., HARVEY, IOWA.

"Boom, boom, bm-r-r-r" come the echoes from a forest copse, and the alert ear catches the sound of the ruffed grouse's challenge to his fellows, a challenge that may mean love or war. He is denied a voice to proclaim his wishes and needs must substitute his wings. He is a wary and alert member of the feathered folk and is ever solitary when he chooses thus to make his locality known, and wary and alert as well must be the human eye that catches a glimpse of the performance.

Few indeed may boast that they have been able to catch sight of the bird in this unique act. So few have ever witnessed it that writers on natural history are not agreed as to how it is accom-

plished, one at least asserting that it is the result of the rapid beating of the wings against the breast. This could not produce the widely vibrating sound so often heard and so easily recognized.

Feathers beating against feathers, no matter how vigorously, could not produce that loud "boom." It requires a sounding board and this sounding board is found in the trunk of a fallen tree, usually of hard wood and free from bark or moss. On this the male bird perches, his body parallel with the length of the tree. Then drooping his wings below the level of his feet, he rapidly beats his "tattoo" on the sides of this, his sounding board. Between the oft repeated challenges his eyes and ears are alert to the slightest sound and at the least disturbance he disappears and is away to his hiding place in the depths of the woods.

To gather the data of this record took months of effort and study. The manner of its accomplishment may not be without interest. Having noted the habitual resort of one of these birds and having located his sounding board as well, careful and extensive preparations had to be made to catch him unawares in the act of issuing his challenge. If once disturbed and driven from one place he will not return to it till after a lengthy interval. In these intervals nearly a full year elapsed before the bird was "trained" sufficiently to return, after I had made numerous attempts to witness his performance. As a dense copse surrounded the place a "hide" became necessary. This was made in the form of a round brush pile with a peephole of small dimensions through its center. It was a long time after this "hide" was made ere the wary bird returned. At last the well-known sound was heard, and I approached the "hide" on hands and knees, crawling only as all sounds were deadened by the beating of wings. Through the telescope hole in the heap of brush I obtained, at a distance of about thirty feet, a splendid view of the bird in full action. Again and again was the view repeated, each time the eye reaching the point of vision just as the performer struck his first note.

After a score or more of careful examinations the bird had yielded up the secret of his dramatic performance, the prying eye was satisfied and the scene

changed to one of tragedy. A rifle shot rang out and mingled its sound with that of the beating wings, and the gallant bird had paid the penalty with its life. The long wing feathers of the dead bird were distinctly worn and roughened where they had come in contact with the hard wood of the fallen tree, a bur oak, and the one point chosen for use showed the roughened sides distinctly smoothed by long use, thus doubly establishing the method by which the ruffed grouse voices his presence to the listening ear, both of his own kind and of man as well.

The Dragon Fly.

BY DR. J. B. PARDOE, BOUND BROOK, N. J.

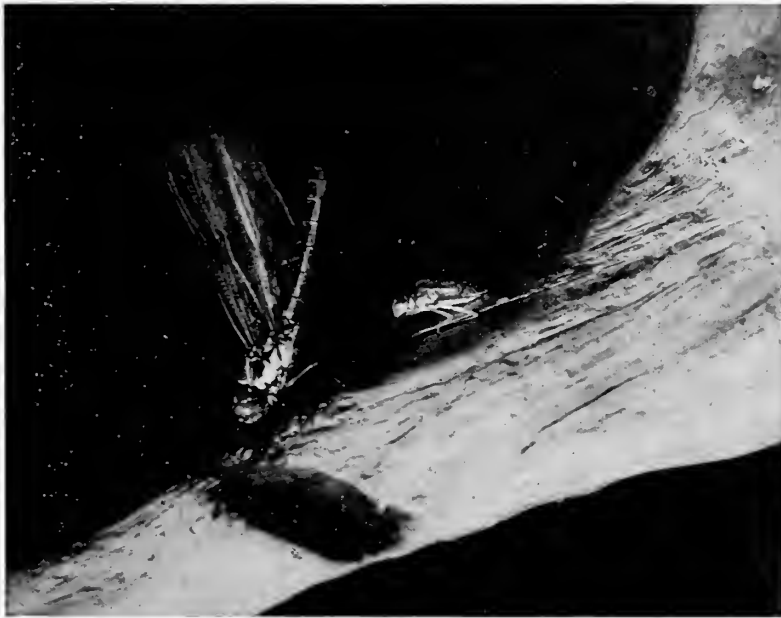
These aeroplane-like creatures, said to be the most swiftly flying of all insects, are often spoken of as the swallows of the insect world. Like those birds they not only fly swiftly but they feed upon the wing.

Dr. J. G. Wood, in his book, "Half Hours with a Naturalist," says, "Its movements through the air are so

spite of the confined space which prohibited the full use of its wings. Its appetite is immense. It will eat a butterfly almost instantly. A lion's appetite cannot be compared with that of a dragon fly.

The dragon fly is considered a useful insect as it eats large quantities of flies, gnats and mosquitoes. Most of us wish it would eat all the mosquitoes, especially the malarial kind that nearly stand on their heads when at rest, and whose bites cause the malaria fever and so much suffering.

When a youngster I was told that the dragon fly was the devil's darning needle and that it would sew up my mouth and ears; also that it was a snake feeder. I often watched them, hoping they would lead me to a snake so that I could see the snake fed. I thought they must be wicked insects or they would not associate with the devil. When about seven years of age I left the town to visit my grandfather, who lived on a large farm. He warned me to avoid the bees with the big



THE DRAGON FLY.

Cut lent by "Photo-Era," Boston.

rapid and its wings so powerful that no other insect can escape them when once the dragon fly gives chase."

Its wing power is marvelous. There is a well-known anecdote of a swallow chasing a dragon fly into a greenhouse and vainly endeavoring to catch it, in

stingers. One evening I saw one of these big bees with a long stinger on the side of the barn. When I started to walk away it darted in my direction. When I stopped it would alight on the side of the barn. I tried to walk away again but it came after me. I called

loudly for help. My uncle came running to see what the trouble was. I told him a big bee would not let me go. He laughed and said, "That fellow only wanted to see where you are going." I never forgot the supposed attack of that large insect. It was a terrible thing to me then and made a great impression.

Children are often terrified by thoughtless persons who tell them that bears will get them and snakes will eat them. Many false impressions are thus created and last for years. Nearly every boy will kill a snake unless told about their usefulness. The Reptile Study Society of America, with headquarters in New York City, and Dr. Allen S. Williams, its Director, have done much in teaching us about harmless reptiles, especially about those that are of benefit to mankind.

The picture of the dragon fly, just out of its shell, was made on the edge of Lake Hopatcong, New Jersey. With my guide I had been to visit an Indian Rock Shelter. Returning by way of the lake, we discovered the dragon fly over a rock. The light being poor, I could not get a good snap shot, and my tripod was useless as I had lost the screw. The good old guide, being a man of steady nerves and good judgment, got down on his hands and knees and, bracing himself, told me to use his back as an emergency tripod. I did not have much faith but tried it and the result turned out to be satisfactory.

Fish Facts.

BY D. H. DECKER, WASHINGTON, D. C.

There were diving beetles, whirligigs and other little water folk in the pond where the frogs and toads laid their eggs and where the tadpoles developed into little frogs and tiny toads, but there were no fish.

Nevertheless there were a little lake and a big river near-by, also a creek joining the lake and river, and in them were abundant fish of many kinds. There was the chub to be caught as soon as the ice went out, then the suckers, the pickerel, the perch, the bull-head, the bream and the bass among which the small-mouth variety was plentiful.

Every one who has caught pike and pickerel knows that they have teeth but how many, I wonder, know that the

chub and the sucker possess teeth. We sometimes have trouble in removing the hook from the mouth of a sucker because the mouth is so small, but in our attempt to do so we appreciate the fact that there are no sharp teeth bordering the lips as there are in the pickerel, the perch and the pike. No, the sucker's lips are smooth and soft and there is not a tooth in sight. Yet the sucker has a fully developed set of teeth. They are even covered with enamel quite like our own.

That a sucker had teeth was announced in our zoology class by one of the girls and it amused me much for I felt sure that some fisherman had been spinning a yarn about the innocent soft-mouthed sucker. After class the girl maintained that she had seen the teeth and would bring a set to school. That evening I dug up some fish heads, among which was one of a red-fin sucker that had weighed some seven pounds. I took the head to pieces carefully and found just back of the gills a pair of bony arches with bony projections along one edge and these projections capped with pearl-like enamel. They were quite a respectable set of teeth and the enamel had worn down so that they resembled human teeth. They were really in the throat and were not located one above and the other below the passage so as to mesh together. They were both located in the upper wall of the passage and worked up and down on to the cartilaginous arched floor of the passage over which all food on its way to the stomach must pass and be crushed.

This incident excited my curiosity as to teeth of fish in general and I began to investigate such fish as I caught to learn what kind of teeth they had and where they were carried. I found that the chub which also has smooth lips carries a set in the same place and manner as does the sucker, but the individual teeth instead of being flat at the ends are sharp and somewhat hooked. They are however covered with enamel which is pearly and white while that on the sucker's teeth was yellow. I have no doubt but that there are other fresh-water fish with teeth in the throat but I have not found them because of lack of opportunity.

I discovered another surprising thing about the fish of our brooks. Any one

with a little care can observe the same thing. The bullhead or pout, and I have no doubt its larger cousin, the catfish, watches over its young. Pike, perch and pickerel will eat their own fry as readily as that of other fish, but the bullhead guards its fry till they leave school. On several occasions I observed in shallow water schools as large as my hat, and formed of tiny bullheads. On the approach of danger, such as a marauding perch, an old bullhead would rush from a near-by cover and stir up the mud under the school till all were lost to view. At another time on the approach of a perch an old bullhead darted toward the perch and after driving him off retired to cover. I was on the brook early one morning, for that is the time to fish in fresh water, when I saw the weeds in motion a little way out from the bank. I crept close and saw in a small clear space a school of young bullheads each about as large as a whirligig, and near-by in the edge of the weeds a large bullhead. I watched for a time, then dropped my hook in near the school. Instantly the old one came for it, picked it up, carried it away for several feet, dropped it and returned to cover. I dropped the hook in again, on the opposite side of the school, and immediately another old bullhead came out from the weeds and picked up the hook but in carrying it off it caught in his lip and I swung him out on to the bank. Then I dropped in again and swung out a second big one. I dropped in yet another time and a big one carried the hook off and dropped it. I knew therefore that there were at least three bullheads watching that one school and giving close attention to duty. It was a surprising and interesting thing to learn first-hand that some fish mother their young. There are many other interesting things to be learned from our brooks, things that appeal to youth more than when learned from books.

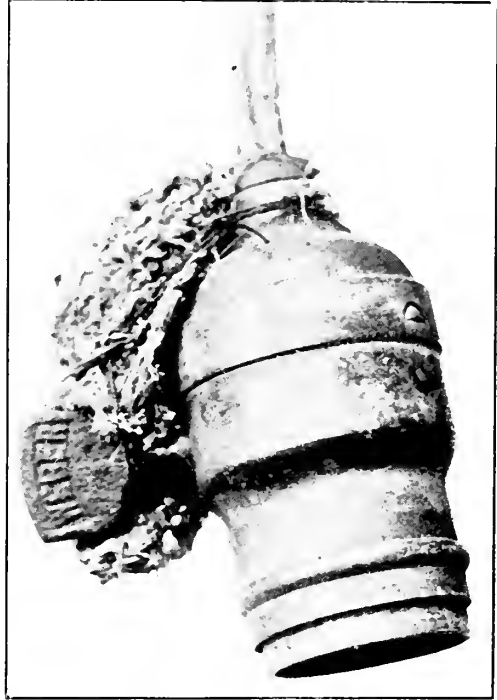
The so-called "fur seals" are not true seals at all, but fur-coated sea lions. They have pointed external ears, and they can turn their hind feet forward to walk on land. The true seals, on the other hand, have no external ears, and their hind legs are for swimming only.

Humming Bird Nest on Electric Light.

Hartford, Connecticut.

To the Editor:

I have mailed to you the humming bird's nest which you saw here a year ago, and of which you wished a photograph. Our attempts have not met with conspicuous success, so we have



HUMMING BIRD NEST ON ELECTRIC LIGHT.

decided to present it to you for your museum, and perhaps your own photographer will be able to make a good picture of it.

The light hung on a bungalow porch in Miramar, near Santa Barbara, California, and was turned on each evening from inside the bungalow without disturbing the birds. It was only when some one climbed up or became too friendly that they left the nest. After the nest had been deserted, it was cut down at the request of my father, who sent it to me.

I hope it will be of interest to some of your visitors.

Alice L. Welcher.

Chlorophyl canopy over my head,
Lying out here in my hammock bed;
While through each rift in the leafy crown,
A star of Heaven is looking down.

—Emma Peirce.

TO KNOW THE STARRY HEAVENS

The Heavens in June.

By Professor Samuel G. Barton of the University of Pennsylvania.

OUR map of the heavens for June has one feature of unusual interest. It has been possible for us to mark on the map the position of the planet Mercury. This planet is very seldom above the horizon at the time for which the maps are made, 9 P. M. Mercury is often called the "elusive

fore and after June 10 constitute one such period. The sun at this time being far north of the equator sets late, and Mercury being near its greatest distance east of the sun sets at a longer interval than usual after the sun. As shown on the map Mercury is below the well-known twin stars, Castor and

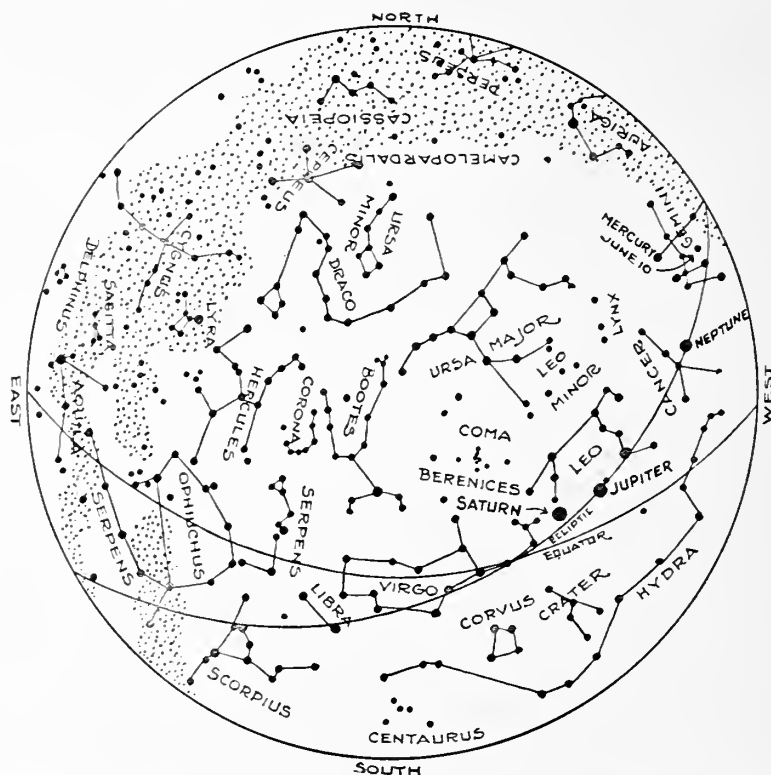


Figure 1. The Constellations at 9 P. M., June 1. Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.

planet" because, being the planet closest to the sun, it is seldom seen far from the sun. It sets soon after the sun or rises just before the sun and hence can be seen only in the twilight in those brief periods when its distance from the sun is unusually large. A few days be-

Pollux, well to the north of west. Mercury is brighter than either of these stars. The planet will be very close to the ground at 9 P. M. To see the planet one should look soon after the sun has set.

Jupiter and Saturn are now in the

western part of the sky. They will soon be in unfavorable positions, leaving the evening sky without conspicuous planets. On June 29 Mars passes the sun and becomes a morning star. It is too close to the sun to be seen now. Venus is brilliant as a morning star. Summer begins when the sun attains its greatest distance north of the equator, as it does June 21, 6:36 P. M.

* * * * *

The Pons-Winnecke Comet.

The path of this interesting comet is shown in Figure 2. The ordinary comet approaches the sun in an approximate-

Jupiter. Such a comet is called a periodic comet. There are about thirty such comets which are called Jupiter's great family of comets. The outer planets also have small families of comets. This comet revolves about the sun in a period of about five and one-half years and, as the figure shows, once in each period comes close to the sun and the earth. We can see the comet only in that part of its path. From B to P the comet is above the plane of the earth's orbit and elsewhere below. The angle between the two planes is nineteen degrees.

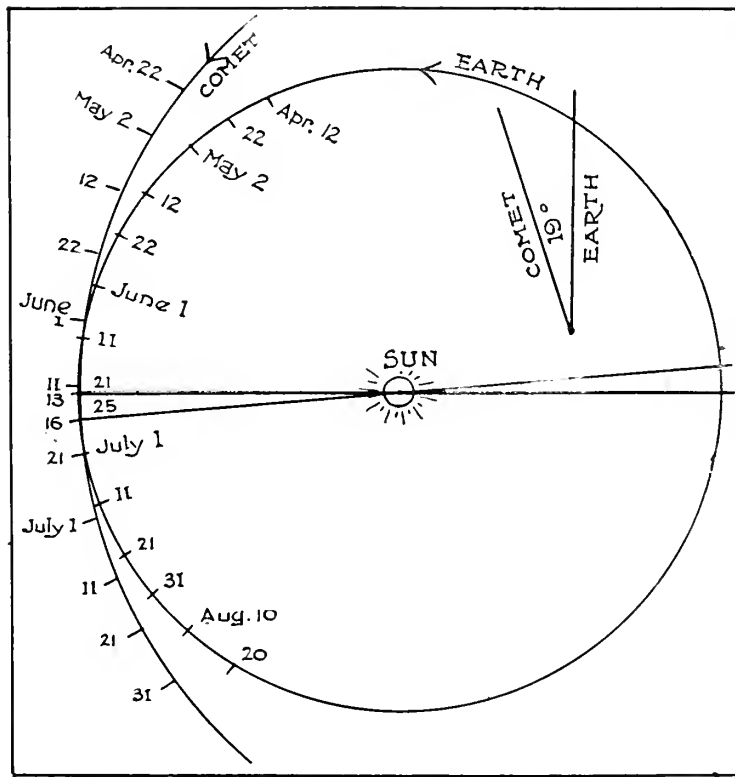


Figure 2. The orbit of the Pons-Winnecke comet.

ly parabolic path and leaves the sun to return, if at all, after an exceedingly long period of time. This comet in coming in toward the sun passed near the great planet Jupiter. Jupiter so changed its path that instead of leaving the sun it moved about the sun in the elliptical path shown. Jupiter's influence is shown by the facts that the part of the comet's path farthest from the sun lies near the orbit of Jupiter and that the comet crosses the planes of the earth's and Jupiter's orbits near the orbit of

This comet was discovered by Pons, in France, June 12, 1819. On March 8, 1858, Winnecke, at Bonn, Germany, discovered a comet which proved to be the same comet. Hence we call it the Pons-Winnecke comet. A comet was seen by Pons for three days in 1808. This may have been the same comet. The calculations necessary to prove the identity have not been made. A comet which was seen in 1766 also appears likely to have been another appearance of this same comet. Since 1859 the

comet has been known to be a periodic comet and its return has been expected at regular intervals of between five and six years. The comet was seen in 1863, 1869, 1875, 1886, 1892, 1898, 1909 and 1915. It was not seen in 1880 and 1904 because of its unfavorable positions at those times.

The comet is a periodic comet of short period which has been seen many times. For this reason alone it is interesting. It has never been a conspicuous comet. None of these short period comets are. Their many returns to positions near the sun seem to exhaust their power to produce tails and gradually wear the comet itself away.

The influence of Jupiter on the comet's path is great. In 1819, for instance, the inclination of the plane of the comet's path to that of the earth

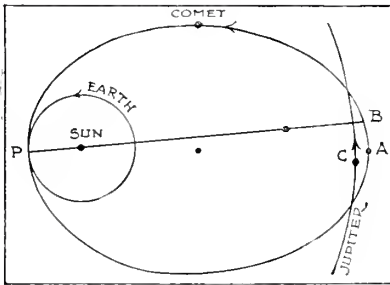


Figure 3. Path of Pons-Winnecke comet near the sun.

was $10^{\circ} 43'$, and the comet's perihelion distance was 72,000,000. These quantities are now $19^{\circ} 7'$ and 94,000,000 miles, respectively. The comet was at A, the point farthest from the sun, about August, 1918. At this time Jupiter was at C. This close approach to Jupiter has changed the comet's path to a considerable path in the last revolution.

Figure 2 shows that a part of the comet's path lies very close to that of the earth. The comet is now in this part of its path. This part is shown in more detail in Figure 3. In considering this figure the fact must be borne in mind that the comet does not move in the same plane as the earth. Until June 16 the comet is above or north of the earth's plane; after that date it is south. The angle between the two planes is nineteen degrees. This angle is shown on the figure.

As we knew about where the comet

would be when close enough to be seen, search was made for it. It was seen first by photography, having been discovered by Professor Barnard of the Yerkes Observatory on a plate taken for the purpose on April 10. The positions of the comet and the earth at ten day intervals are shown in the figure. The earth moves with a nearly uniform velocity of $18\frac{1}{2}$ miles per second. The comet moves with a velocity which varies with its position. When nearest to the sun June 13 it moves at the rate of twenty-four miles per second, the velocity elsewhere being slightly less. Thus the comet gained on the earth and passed it in May. Because of the inclination, however, the comet was not closest to us at that time. This occurs early in June.

This comet passes through the plane of the earth's orbit on June 16. Its distance from the sun at that place is almost exactly equal to the distance of the earth from the sun at that place, so that there is very nearly a real intersection of the paths themselves. If the comet and the earth reached this point at the same time the bodies would be very close together indeed. As will be seen, the comet passes this point June 16 and the earth June 25, so that the bodies are far apart at the time, as the comet is nine days' motion ahead of the earth, about 18,000,000 miles.

Even if the intersection were exact the chances of collision are so small as to be negligible, as the earth is so small and space so large. If the head of the comet were 1,000,000 miles in diameter, and that is about the largest known, the earth might collide with the head about nine hours before or after passing the intersection. In this case the only observed effect would be a fine meteoric shower. If the nucleus of the comet, which is the solid part, were as large as the earth, which is the size of the largest, the collision could only occur in the eight minutes before or after the earth passed the intersection. In this case there might be some damage where the collision occurred. The fulfillment of such conditions is so unlikely that a collision with a comet is an exceedingly remote possibility. No comet has been known to have approached the earth closer than that of 1770, which was 1,400,000 miles away.

When the earth passes through the

point of intersection on June 25, or thereabouts, a meteoric shower is expected. Such a shower was observed when the comet appeared in 1916. This will probably be the most interesting thing to be observed in connection with the visit of the comet, as the comet itself will not be bright.

Beneath the Ocean Surface.

BY CHARLES NEVENS HOLMES, NEWTON,
MASSACHUSETTS.

Above the ocean surface there is air, beneath it there is water. Both air and water have weight, both are being drawn towards our earth's center. Fresh water weighs about 773 times as much as air; that is, $62\frac{1}{2}$ pounds per cubic foot. Ocean water is heavier than fresh water, owing to the salts which it contains, and one cubic foot of ocean approximates $64\frac{3}{10}$ pounds. Our world possesses an ocean area of about 140,000,000 square miles, and inasmuch as the average oceanic depth is about $2\frac{4}{10}$ miles, the total amount of water in our earth's oceans approximates 336,000,000 cubic miles. According to these statistics, the total oceanic weight approximates 3,000,000,000,000,000,000 pounds; that is, one and one-half quintillion tons are pressing against the bottoms and shores of our oceans. In other words, our oceans weigh about one-four thousandth of our world's weight, and about one-fiftieth of our moon's weight.

It has been stated that a cubic foot of sea water weighs about $64\frac{3}{10}$ pounds and, therefore, a cubic inch weighs about .037 of a pound. Therefore, for each inch that we descend beneath the ocean surface, there will be an additional .037 of a pound upon every square inch of our body. That is, since the total area of an adult human body approximates 1,900 square inches, at one foot beneath the ocean surface, the pressure upon an average man's body will amount to about 844 pounds. In other words, at 12 inches beneath the surface, there would be a weight upon each square inch of our body of .444 of a pound. And, as we descend into oceanic depths, this pressure will increase directly as the depth. At one hundred feet it would amount to 100 times .444 of a pound per square inch, or 100 times 844 pounds pressure upon our whole body, about $42\frac{1}{5}$ tons. If

one thousand feet below the ocean surface, the pressure upon each of us would approximate 422 tons. Such being the oceanic pressure upon a small object like a human body, what must be the stupendous pressure upon a huge object like a sinking ship?

It is evident, since water is practically incompressible, since any sinking body is heavier than the same bulk of the surrounding water, and inasmuch as oceanic pressure is equal in every direction, that a sinking body will descend to the very bottom of the Pacific or some other ocean. Now, the very bottom of the Pacific, as far as is known at present, has the great depth of about 32,000 feet or 6 miles. If we multiply 32,000 feet by 12 inches, we obtain the distance in inches from the top to the bottom of our largest ocean. Then, by multiplying 384,000 inches by .037 of a pound, the result gives us what would be the approximate weight upon each square inch of our body were we to sink to the very bottom of the Pacific. The answer is a little over 7 tons! But there are about 1,900 square inches upon the body of an average man, so that, at the very bottom of the Pacific, such a body would be crushed by a total pressure of approximately 13,500 tons. Those of us who dwell at sea level are surrounded by an atmospheric pressure of 14 tons per each individual, but were we to be placed suddenly at the bottom of our greatest ocean, we should be instantly destroyed by a weight equal to about 964 atmospheres. And were a cubical block of iron, 35 feet in each of its three dimensions, about the size of an ordinary dwelling house, to sink to the very bottom of the Pacific, the total oceanic weight upon the six sides of this iron block would approximate 7,514,640 tons. The sides of such a large block, provided it were hollow, would certainly have to be very thick and strong in order to sustain a total pressure of 15 billion pounds.

Nature is our steadfast neighbor,
Ever at our beck and call,
And between us there is never
Any sign of boundary wall;
All her purlieus standing open,
Waiting for our lagging feet,
And whene'er we deign to enter,
Always sure of welcome sweet.

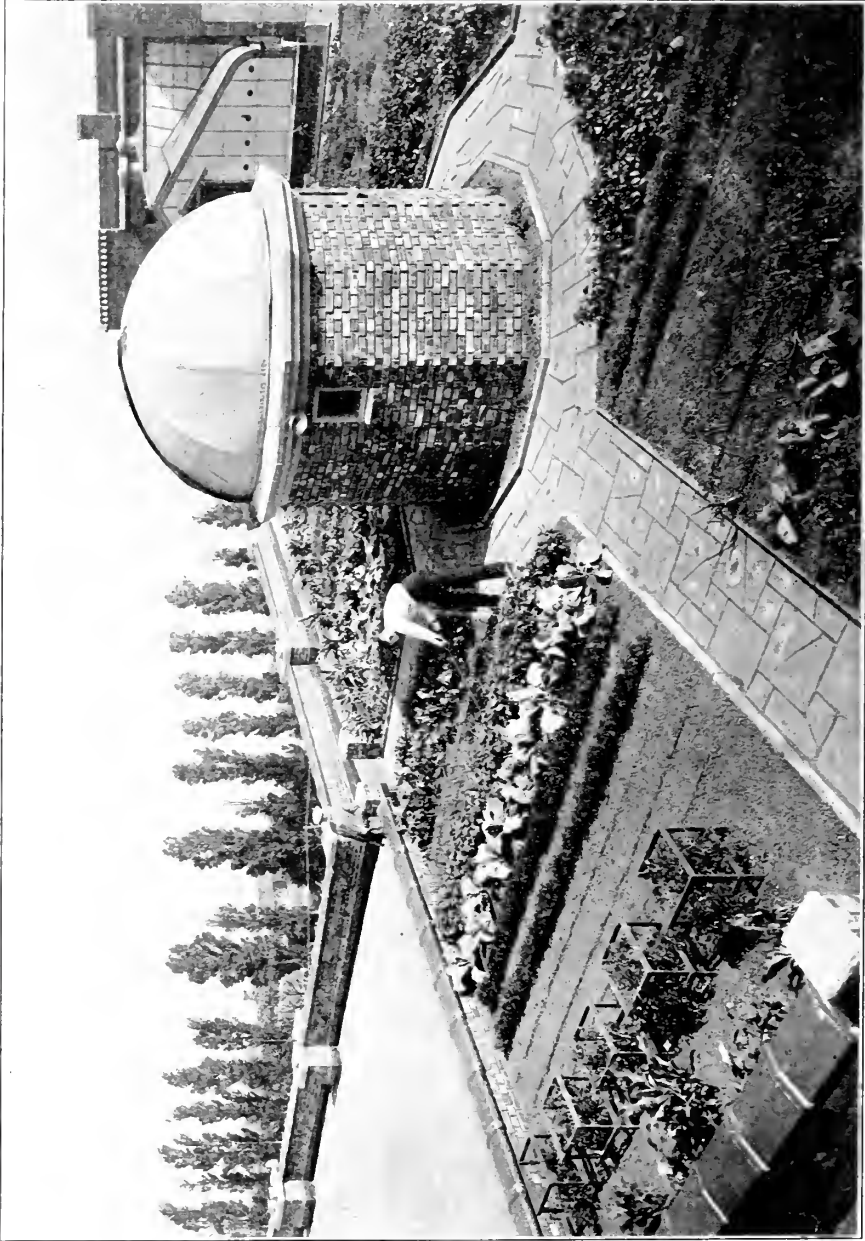
—Emma Peirce.

An Observatory and a Garden on a Factory Roof.

Here is perhaps the most original observatory and roof garden in all the world. They are unique. Mr. Albert F. Schroeder, the General Manager of The Globe Machine & Stamping Company of Cleveland, Ohio, has put on the

ish bungalow, a formal garden, a sundial and a fountain as well as an open-air moving picture theater for the Globe employees.

What more can you expect up there in the air where land is cheap? It seems to be a good suggestion for many a house in the city where a garden and



AN OBSERVATORY AND GARDEN ON A FACTORY ROOF.
Illustration lent by "Popular Astronomy," Northfield, Minnesota.

roof of his factory an effective little observatory and surrounded it by picturesque features including a kitchen-vegetable garden, a greenhouse, a Span-

many other nature interests might be placed on the flat roof. The only additional thing that we can suggest to Mr. Schroeder is an apiary. But he

might fear that the bees might not be entirely tractable. To be pursued to the edge of the roof might not be agreeable to his guests.

When Mr. Schroeder was only thirteen years of age he had for several years previously been reading the standard works on astronomy and geology. In "The Youth's Companion" he read an article, "How to Make a Telescope." A curtain pole about forty inches long and two inches in diameter, he wound with heavy packing paper to a thickness of about a quarter of an inch, liberally brushing glue between the layers. It is not necessary for us to go into details, because we think he will send a reprint of the article in "Popular Astronomy" of February, 1921, to those who are interested.

The telescope in his observatory is an Alvan Clark of five and one-half inch objective. The revolving dome is of steel made by the Globe factory mechanics.

Mr. Schroeder sets a good example to other mechanics who have not been able greatly to advance their school education. He has demonstrated the fact that the grand and beautiful things of the universe may be enjoyed with comparative ease and much pleasure. He is a good missionary. He is friendly among his employees, kind and companionable. The library of his club-room in the factory contains about forty books on astronomical subjects in which the employees are encouraged to interest themselves. Those who as a result manifest some advance in knowledge or even in curiosity are invited to use the observatory.

God's Out-of-Doors.

The cool green woods are beckoning.

The hills are calling too,
A challenge are the mountain tops
That loom into the blue.

Each little brook a welcome sings,
The fields invite to roam,
The breezes and the flower scents
Are luring us from home.

The ocean, sparkling in the sun,
Is more insistent still,
And every little dancing wave
Doth summon with a will.

In all this generous, gracious land,
E'en to its farthest shores,
There is no place in Summer time
Quite like God's Out-of-Doors.
—Emma Peirce.

Prohibition Benefits Natural History!

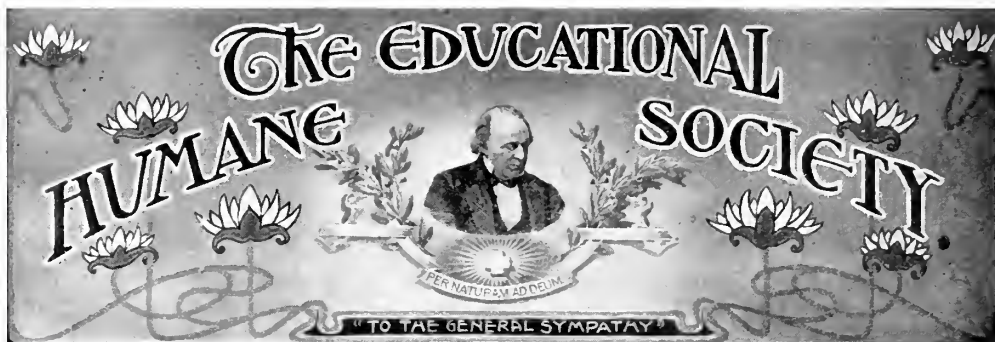
A new weapon has been placed in the hands of the "drys." Before the adoption of national prohibition one of the only two skulls of the mammoth, *Elephas primigenius*, adorned a Cincinnati barroom, the proprietor of which refused all offers for it. Now that his business has been legislated out of existence, the skull has been acquired at a modest price by the U. S. National Museum.—"Scientific American."

Of course prohibition should benefit natural history, not merely in the semijocose manner set forth in this item, but in a variety of ways. We have in mind that not merely the money formerly spent in drink should now go to education but that the efforts and money of prohibition workers who claimed they were working in behalf of the betterment of humanity, especially of the children, should now go to institutions like The Agassiz Association and others.

Prohibition is a fact, whether we like it or not, and whether we agree that it is working out well or not. It is probable that there are yet a few little details to be attended to but in the main it is perfectly safe for those who wish to say civilization advances through the channels of education. But turn from education to institutions that disseminate knowledge.

Then there is another class of workers. Those who have labored so faithfully in behalf of equal suffrage for the woman as for the man. The work is over and we cordially invite the woman to turn her attention to our educational work. There are good many phases of child welfare that do not come within the strict scope of the naturalist's institutions, but in the main one may say that the more the attention of children and of parents is turned to the great out of doors the better it will be for the sane and safe democracy of America.

Naturalists interested in locusts, grasshoppers, crickets and their allies, will welcome Albert P. Morse's "Manual of the Orthoptera of New England." The volume contains some 360 pages, with nineteen plates, and is Volume 35, Number 6, of the Proceedings of the Boston Society of Natural History.



A Chapter of the Agassiz Association. (Incorporated 1892 and 1910.) The Law of Love, Not the Love of Law.

Humane and Nature Education.

This old world at present peculiarly needs humane and nature education. It needs greater kindness and more altruism. Thoughtfulness and appreciation of other forms of life were never needed so much as at present.

There was a time when training in the humanities was looked upon as a sort of mussy fad by oversentimental people, but the last few years' events in the world war and the strange state of unrest, clamor and faultfinding that followed showed that the greatest thing in all this world is love, and that love must be applied not merely to one's own family or to congenial friends; it must be like sunshine, radiating and warming up everything within its rays' reach. It is not enough to like the fellow that likes you. It is not enough to seek the things that cater immediately to one's own prosperity. There must be a broader appreciation of everybody and everything everywhere. The scope of the humanities is extending. There was a time when it was thought sufficient to stop by court sentences or reprimands the man from pounding his horse or the boy from kicking his dog. But now we see that the mere stopping of cruelty is not enough. There must be back of that a kindly sentiment that will incite regard for the distant star, the diatom of the ditch or the people of Japan or Germany. What is even more difficult than distance in miles to overcome is remoteness of another fellow's sphere of activity. Capital must understand labor and labor must understand capital. For either class not to pound the other is of vastly more consequence spiritually and utilitywise than it is merely to

force a man to stop beating his horse.

We, the Members of The Agassiz Association with our special ideals, are not altogether in sympathy with some of the things which to the unthinking would seem self-evidently in harmony. Take, for example, much of this talk of "back to nature." It is not altogether commendable when it means no more than greater personal comfort and a beautiful estate in the country with the best flower garden, record making hens and prize bulls with a liberal sprinkle of Packards and Locomobiles. That may be going to nature and it may not. It all depends. It may be in a spirit of the good of humanity and it may not.

A commendable example of an estate with highly altruistic purposes is that of Laddin's Rock Farm, owned by William L. Marks, not far from ARCADIA. Mr. Marks has spent much money upon roads, trees, shrubbery, and then he has said freely and cordially to the public, "Enjoy it." Now there is real appreciation of nature and real appreciation of humanity.

The same spirit has animated hosts of contributors, Members and workers for The Agassiz Association. All have combined to build and carry on beautiful ARCADIA under altruistic principles and ideals hardly equalled by any other organization.

But to return for a moment to this "back to nature" movement. It is not merely the rich man who may be in danger of forgetting the other fellow, but also the technical biologist who may be so absorbed in his own involved and intricate researches as to forget to stimulate the interests of those who do not know so much or to help them. Learning like dollars may be hoarded

in a miserly manner, but blessing on those with dollars and blessings on those with great learning and blessings on those with kindly spirit who at the present time are radiating the sunshine of cordiality to other people.

The big problems of the world will not be solved by bayonets, nor by trusts, nor by labor unions, but as they have always been by the greatest thing in the world, and that is kindness of heart and helpfulness to other people.

Inspirations and Suggestions for Walking.

[Quotations from Editorial in Recent Number of "The New York Journal."]

Now that the piping days of Spring are here, take a walk!

Ride first to where you can walk to some profit. Go out to some suburban station. All the better if you never heard of it. Get off the train and hike out.

Go down the green lane and cross the brook, climb the hill and wander through the woods, along the road to nowhere.

Discover the sky and surprise the violet. Watch the robin and spy out the fern. Sit long and silently upon a log until the little folk of the forest lose their shyness and play their antics before you.

Realize that there are many silent worlds besides your own, circles known to woodchucks and unknown to society, and spheres of influence among feathers and fur of which Downing Street and Washington reckon not.

Walk on and suck the sweetness of the health-laden breeze, steal glimpses of the virgin beauty of the apple blossoms, wonder at the far-off hawk poised in the high air, learn peace from the wide-eyed cows and frolic zest from the shaggy colt.

* * * * *

Walk!

Walk enough and you will walk out of your pigeonhole, your party, your set, your niche, your cult, and into your proper soul.

Which, heaven knows, will be a far country.

Buttercups.

As soon as the fragile flowers unfold
The sun transmutes them into gold.

—Emma Pe'rce.

Glasses When Using Microscope?

Andover, Massachusetts.

To the Editor:

The question of wearing glasses when using a microscope still puzzles certain of your correspondents. The facts are simply these:

If the trouble of the eye is in the focusing—that is to say if the eye is myopic, hyperopic or presbyopic—the error may be offset by altering slightly the focus of the microscope. In these cases glasses should not be worn for microscopic work, since the microscope itself will adjust the focus better than the glasses can do it.

But if the trouble with the eye lies in the irregular curvature of its lenses—that is to say, if the eye is astigmatic—then glasses will have to be worn for work with a microscope for precisely the same reason as for any other work.

A simple test of whether one should or should not keep his glasses on is this:

Assuming that the glasses have been properly fitted by a competent oculist, hold them at arm's length, and look through the glass of the "sighting" eye at lettering about a half inch in height. Rotate the glasses about the line of vision. If the letters change shape, wear the glasses with the microscope. If the letters do not change shape, leave them off.

EDWIN TENNEY BREWSTER.

Reversed Ice Cone.

Audenried, Pennsylvania.

To the Editor:

The cone of ice which you picture and describe on page 137 of *THE GUIDE TO NATURE* for February differs from mine as follows:

In mine the water shot out of a small hole in a pipe, extending horizontally over the creek bank and forming a body with the small end at the pipe and the larger end away from it, just the reverse of the one in upper New York State. The whole form was connected with the pipe by a stem of ice only as thick as a baby's wrist, the water shooting through it under considerable pressure. The inside of the ice had the form of a cone.

CHARLES D. ROMIG.

Extend interest in our work among your friends. Send addresses.



Established 1875

Incorporated, Massachusetts, 1892

Incorporated, Connecticut, 1910

MARY AUGUSTA BIGELOW

WIFE OF

THE EDITOR OF THIS MAGAZINE

BORN PORTLAND, CONNECTICUT, JULY 1, 1853

DIED "BIRCHEN BOWER," ARCADIA: SOUND BEACH, CONNECTICUT,
MAY 14, 1921

Mrs. Bigelow's life ideally exemplified the threefold work of The Agassiz Association: Church, Home, School.

1. CHURCH. A devoted member of the Episcopal Church. She was for many years a member of the choir of Trinity Church, Portland, Connecticut, and an active worker in various societies in that church. For the past twenty-four years she was a member of St. John's Episcopal Church, Stamford, Connecticut, and for a number of those years was an active worker in the Girls' Friendly Society.

2. HOME. As an only child she lovingly cared, for many years, for an invalid father and mother, and was also a devoted wife and mother. She is survived by two daughters—Miss Nellie Pelton Bigelow and Miss Pearl Agnes Bigelow; a son—Woodbridge Fuller Bigelow, and three grandchildren—Doris Clement Bigelow, Sherman Dean Bigelow and Elizabeth Goodman Bigelow.

3. SCHOOL. Previous to her marriage she was a school-teacher for several years and has always been actively interested in education. She has been

a worker in The Agassiz Association for thirty-one years, beginning in '90 as assistant editor and proof reader of "The Observer" Magazine at Portland, Connecticut, for a number of years the official organ of The Agassiz Association. Into the work of our beloved Association she entered even more extendedly fourteen years ago and continued that interest almost to the hour of her death. For several years she kept the bank and advertising accounts and occasionally in the earlier years assisted in other clerical work. She read the proofs of every number of THE GUIDE TO NATURE, with the May number completing Volume XIII only a few days before her final illness of a week.

The funeral service, conducted by the Reverend Gerald A. Cunningham of St. John's Episcopal Church of Stamford, was held in the Welcome Reception Room of ARCADIA on the afternoon of May 16. The interment was in Trinity Cemetery, Portland, Connecticut, on May 17, and the service at the grave was conducted by the Reverend W. E. Hooker, Portland, Connecticut.



What Our Visiting Parties Do.

ARCADIA, the Home of The Agassiz Association, has been as definitely planned and equipped to carry on the work of that Organization as is a factory to produce a certain class of goods. The purposes of The Agassiz Association as set forth in the Charter of Incorporation may be summed up as "the general diffusion of knowledge" of nature. That work is carried on not only in the spirit of education but also of recreation permeated by a spiritual and a poetical point of view. We welcome all creeds or no creed. All phases and all ages of humanity we meet on the common ground of loving appreciation of Mother Nature.

The program of the day is as follows:

Parties arrive at 11:00 A. M. (or a little after that if they come by train from New York).

1. The address of welcome at Hickory Home on the Pavilion of Little Japan.

2. Disposal of wraps, packages, lunch boxes, etc.

3. Committees set the tables on the Pavilion, make coffee, cook bacon and eggs, etc., on the grills. Members of the party not thus occupied spend their time in social conversation, examination of the books in the Rest Cottage, playing the piano, singing, etc.

4. Lunch is served on the Pavilion. This usually occupies about an hour completed by the restoring of tables, dishes, etc., to their perfect order ready for inspection about 1:00 P. M.

5. A walk through Nymphalia with explanations and inspirations pertaining to wild nature. This is really a communion with nature in her most primitive form as it would be difficult to find in all the state a wilder tract of swamp land.

6. Demonstrations with the honeybees in our Educational Apiary.

7. Visiting the Astronomical Observatory and learning the fundamental principles of popular astronomy.

8. Visiting the Office, Laboratory and the formal garden where are pointed out, in sharp contrast to the wild of Nymphalia, the beauties of formality in ideally balanced landscape architecture on small premises. This is to show the possibilities of really good arrangement in a small yard.

9. Chair of Natural History—a five minute talk in the Welcome Reception Room.

10. Phonographic Optical Projection of Welcome.

11. A lantern slide talk on the purpose of ARCADIA and of The Agassiz Association concluding with projection microscope exhibition not equalled anywhere else.

12. Brief visit to Little Japan for social greetings and talking over the affairs of the day.

Parties arriving at 4:00 P. M. usually remain until 10:00 or 10:30 P. M., having practically the same program with the exception that the honeybee demonstrations come immediately after the introductory talk.

Rules of ArcAdiA.

1. Parties must keep together while on the grounds. They are permitted to divide only in doing down to the stores at the end of Arcadia Road. This point is absolutely insisted upon. At no time are visitors permitted on the grounds of ARCADIA without a guide from the Office, and parties may be divided only when each section has obtained such a guide. This is seldom if ever necessary.

2. Nothing is to be picked in ARCADIA—not even a leaf.

3. Parties conducted around the premises must go single file because walks are narrow and there must be no stepping out of the path. We keep wild nature clear up to the walks and every-

thing must be untrampled with the exception of the ground of the apiary where it is impossible for those who participate in the demonstrations to keep on the walks.

4. Reading newspapers is not permitted except by those who remain overnight. Our facilities, contributed by our Members and friends, must be used to best possible advantage. We follow the instructions of Henry David Thoreau to read not "The Times" but the "Eternities." For those who desire to read there are about a thousand nature books on the premises. A book on almost any phase of nature will be supplied on request.

5. Dishes and other conveniences must be left in the same good condition in which they are found, ready for further use.

About sixty members of The Brooklyn Institute of Arts and Sciences spent Saturday, May 7, at ARCADIA, having the usual program of six hours in length.

Sunday, May 8, The Rambling Club of Paterson, New Jersey, spent the same time with similar program. All expressed themselves as greatly interested in the work.

Contributions to Little Japan.

Mrs. C. O. Miller, Stamford.	\$10.00
Colonel J. H. Graham, Sound Beach	5.00
Mrs. Theodore Peters, New York City	15.00
Mrs. Herman LeRoy Edgar, Dobbs Ferry - on - Hudson, N. Y.	5.00
Mr. J. B. Whitney, Brooklyn, N. Y.	5.00
King's Daughters, Sound Beach	5.00
Mr. Charles D. Romig, Audenried, Pa.	1.00
	<hr/> \$46.00
Previously acknowledged	\$2,561.17
Total	<hr/> \$2,607.17

Contributions.

Mrs. Zenas Crane, Dalton, Mass.	\$20.00
Mr. Russel A. Cowles, New York City	5.00

"Explorer in God's Country"	25.00
Mrs. Albert Crane, Stamford	10.00
Mr. William J. Johnson, New York City	15.00
Dr. S. S. Goldwater, New York City	5.00
Mr. Theodore H. Cooper, Batavia, N. Y.	5.00
Mrs. Henry Lee Higginson, Boston, Mass.	10.00
Mr. Arthur L. DeGroff, Newark, N. J.	25.00
Honorable Francis O. Winslow, Norwood, Mass.	10.00
Miss Susan S. Fessenden, Pasadena, Cal.	3.00
Mr. Frank S. Fay, Meriden, Conn.	3.00
Mr. Arthur A. Carey, Waltham, Mass.	3.00

WANTED: A GIFT OF \$5,000.

Forty-six years of youthful activities—we are the Association that never grows old or out of date.

Forty-six years of dependence upon the living—we have never deprived any one of the joy and satisfaction of seeing how contributed money was spent, thus inciting to repeated gifts from nearly every one.

Though death has taken from us many of our most liberal contributors, we have superlative faith that somewhere will be found the one to give us the five thousand dollars to be used in a detailed plan under the personal approval of the contributor.

We make moderate amounts of money go a long way. We point with pride to every detail of our record of almost a half century. There have been only two managers of The Agassiz Association, the former for thirty-two years, the present for fourteen, and neither has received salary for the executive management of The AA.

No other charitable and educational organization has a better Board of Trustees. They represent a wide range of territory and interests—characteristic of The AA.

The United States Post Office Department at Washington carefully investigated The Agassiz Association and because of its altruistic, educational and noncommercial purposes awarded a special low rate of postage to its official magazine.

The Treasury Department Internal Revenue also carefully investigated and exempts from income tax The Agassiz Association and all gifts to it.

We have gladly and freely helped many other organizations in their nature interests. We untiringly render free services at ARCADIA to rich and poor, young and old. To us come a wide range of visitors. Our correspondents include every phase of humanity.

We invite detailed investigation.

We need and merit a gift of \$5,000. Do it now. Do not wait until you are dead. We want to give the donor the joy and satisfaction of knowing just how advantageously the money will be expended.

We always have been a lively organization for the living, by the living.

Faithfully yours,

EDWARD F. BIGELOW,

President The Agassiz Association, Inc.

Retrenchment.

One of our good friends in response to a request for a contribution to our deficit of income and excess of expense writes that now is the time for retrenchment. That is the way in which we feel about the great part of fool things that humanity is and has been doing. Indeed at times we must confess that feeling about our own work. It does seem as if the burden was coming on us a little too hard, and that retrenchment is necessary. But when we are about as discouraged as we possibly can be along comes a letter of appreciation of our work and is so helpful that we take hold with a grip firmer than ever before and we determine not to retrench to the slightest degree in any part of our efforts.

No one outside of the inner workings of ARCADIA and The Agassiz Association correspondence can understand how severe this burden is, and how much we appreciate the fact that we cannot let go even if we would. We can spare no efforts in justice to the work and particularly to our good friends, past and present. It isn't ours to reason why; it is ours to do—so long as we live. Good friends, the world has retrenched on a great many fool things and we hope there has come a time for more retrenchment in matters savage and warlike, but as for retrenchment in matters of education, that is an unthinkable idea. The situation is the reverse as George Washington said at the close of the Revolution in his farewell address:

"Promote, then, as an object of primary importance, institutions for the general diffusion of knowledge."

The Agassiz Association and Gifts to it are FREE from Income Taxes.

TREASURY DEPARTMENT

Internal Revenue Service

Office of the Collector, District of Connecticut,
Agassiz Association, Inc., Sound Beach, Conn.

Hartford, Conn., April 13, 1921.

SIRS:

With further reference to your letter of February 28th, 1921, you are advised that the Commissioner of Internal Revenue at Washington, D. C., has considered all facts as presented relative to the activities of your association and has decided that you are exempt from the filing of income tax returns under the provisions of the Revenue Act of 1918.

The Commissioner has further stated that amounts contributed to your association by individuals may be deducted in the income tax returns of said individuals to the extent provided in Section 214 (a) (11) of the Revenue Act of 1918.

Very truly yours,

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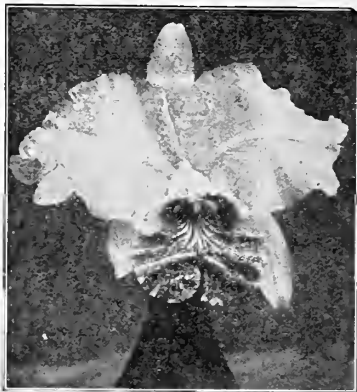
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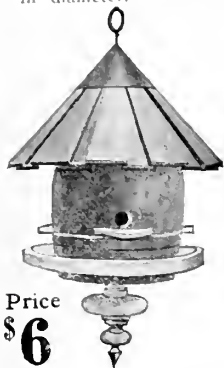
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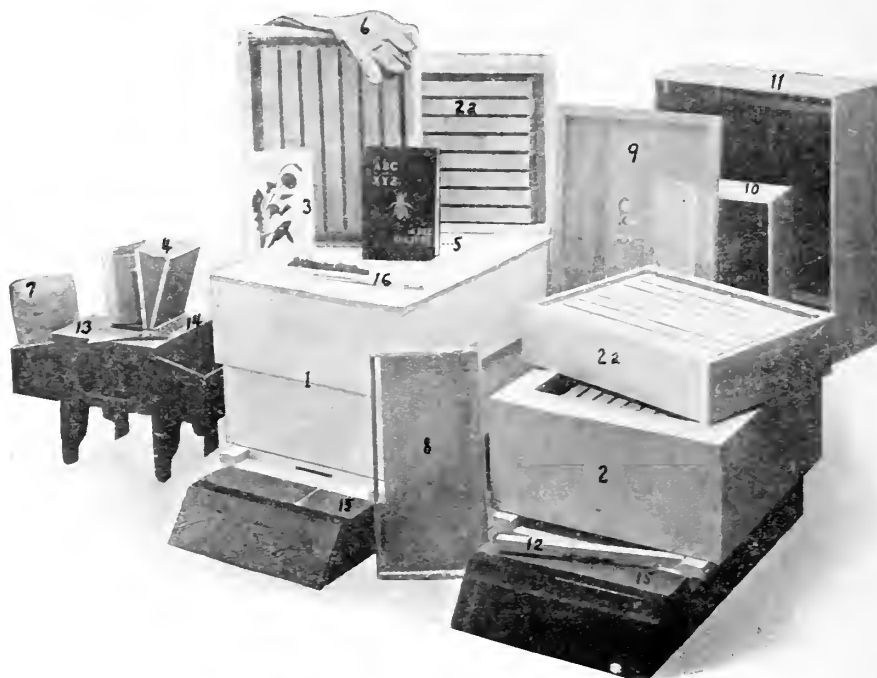
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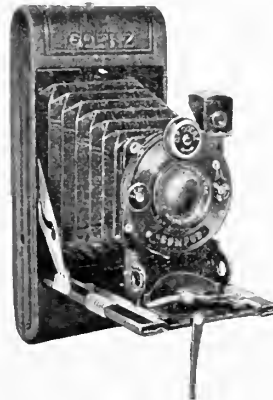
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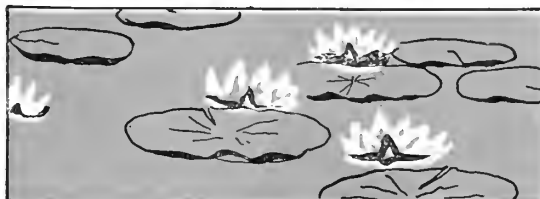
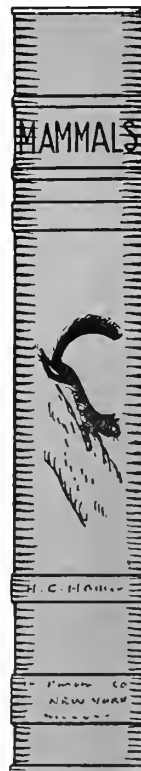
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SOUND BEACH, CONN.
Edward F. Bigelow, Editor

VOL. XIV JULY, 1921 No. 2



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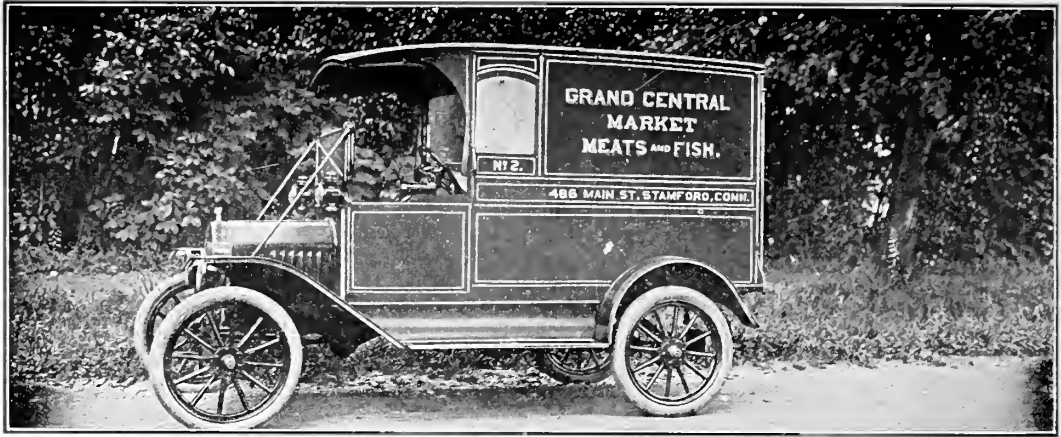
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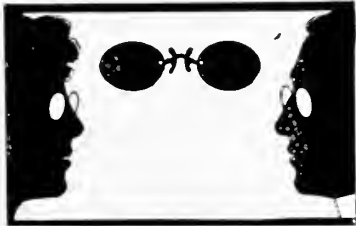
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The Traveller.

A crocodile from Calabar
Went travelling to Malabar:
"I had not thought it were so far
Or else I'd stayed in Calabar!"

We Welcome a Health Cooperator.

"With good health everything; with bad health nothing." These were the words of an invalid to the editor of this magazine several years ago with the special request that they be reiterated by him at every opportunity. Of course every reader of THE GUIDE TO NATURE knows that we advocate outdoor occupations and interests not only from the mental and moral but from the physical standpoint. One must have an incentive to go afield. There must be joy and enthusiasm in whatever is done.

In the same spirit in which we recommend the personal benefits of an interesting hike, a camping trip, the study of the interests of nature, we also believe it within the scope of our magazine to recommend healthful, strength giving foods. Proverbially bread is the staff of life and the beechnut is equally

well-known as a synonym of all good things. The beech is rather the most hugable and lovable of trees. We like to get near it, to pat its smooth bark, to admire its clean trunk and to gaze upward through its cool branches. There is in its beauty something poetical, classical, yes, even musical if we go back to Virgil. It represents joy and happiness and is the concentration of health giving, joyful, outdoor activities.

The Marsh Bakeries of Stamford from long experience have evolved the best form of bread now on the market in this vicinity. We like their name, "Beech Nut," for this bread. They evidently understand that good things come from Mother Nature, and they are giving us wholesome, palatable, health promoting bread for our activities in nature's realms. Long may the Marsh bakeries be gratefully regarded by a bread appreciating public!

High Grade Lenses at Low Prices.

Readers of this magazine are familiar with the strong stand taken by its editor that every photographer should, even at personal sacrifice if necessary, obtain a high grade anastigmat lens. We are glad to announce that Charles G. Willoughby, Inc., 110 West Thirty-second Street, New York City, is issuing a special bulletin giving interesting information along that line. The bulletin is known as No. 137G and we cordially invite our readers to send for a copy at once, referring to THE GUIDE TO NATURE. Mr. Willoughby has standard makes from our best opticians. Personal information and advice will be given by the editor of this magazine upon request.

Another reason why men don't go back to the farm is that it cost them all they had to get away.—Washington Post.

A MAN FINDS CONTENTMENT

in knowing that he is right in appearance—in knowing that his clothes are in good style, and of fine quality; being properly dressed is a pleasure that is part of the joy of living.

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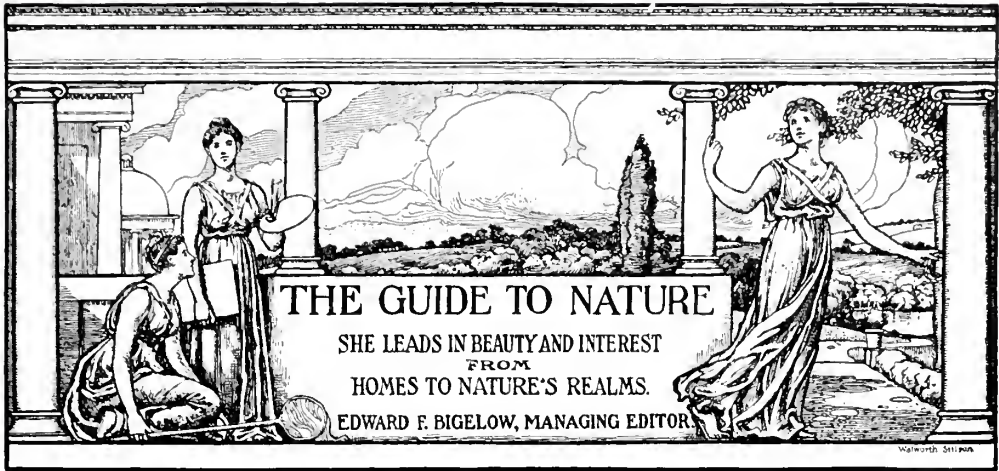
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Volume XIV.

JULY, 1921

Number 2

The Bruce Museum.

The People of the Towns of Greenwich, Stamford and Vicinity Are Cordially Invited.

THE Bruce Museum, near the Greenwich depot, has been for several years in process of development and the work is still going on. It is open to the public every day in the year, even including Sundays if special arrangement is made with the curator. The museum was taken over by the town last autumn although the equipment is still continuing under the Board of Trustees with Edward F. Bigelow as Curator and Paul G. Howes as Assistant Curator.

For lack of funds the water was turned off and there was no heat in the building during the winter. It is greatly to be desired that in the near future that condition be remedied.

With the summer exhibition by the Greenwich Society of Artists in the gallery of the museum quite naturally there is an added interest, and for that reason as well as for the more comfortable temperature the number of visitors increases. Miss Cora Parker has been engaged for the summer months as docent and will assist in making not only the gallery but the other departments available to visitors.

Three floors are devoted to the purposes of the museum; viz., natural history, history and art. More than four years of intense effort have been spent by the curators and those interested in the development of collections. The material now displayed in its authenticity and beauty cannot be rivalled in any other small museum in the East.

On the main floor is the room devoted to American mammals, in which most of the species now inhabiting the state, together with those formerly living in it, are displayed in their natural surroundings. Some of these exhibits required months of preparation as even the leaves of the woodland trees and the blossoms of wild flowers are reproduced in wax. Such large animals as the black bear with young, elk, Virginia deer, and others are represented, together with a host of beautifully mounted smaller mammals, including bats, jumping mice, shrews, beaver, porcupine, squirrels, foxes and peccaries.

Owing to their special interest a few foreign animals have been added, among which will be found the giant

kangaroo of Australia, lioness and young and the pigmy deer of Asia.

On the second floor will be found the ornithological collection. Here are all the native birds beautifully mounted and classified so that anybody may easily identify any bird that he has seen. There are also four large groups illustrating the seasons in bird life—spring in the woods, spring and summer on the shore, fall, and winter. These are finely executed habitat groups with the foliage and vegetation done in wax. They take up an entire room.

A new exhibit of great interest on this floor and one of the finest in the museum is the Paul G. Howes collection of local, northern, western and South American birds' nests and eggs collected personally in various parts of the world, and now publicly displayed for the first time in a specially designed case of plate glass. This collection shows typical forms of all the most beautiful and intricate nests and is a revelation to any one who sees the beauty in nature's work. The eggs of some of the South American birds are like gems in their lovely colorings. Fifteen nests with tiny eggs of humming birds from Venezuela are displayed, and also the first nest ever found of a ground thrush, collected by Mr. Howes in the Colombian Andes at an altitude of over nine thousand feet in the heavy forests of that region.

Other recent additions of immense interest are the specimens lent by Mr. A. W. Bahr, recently returned from China, and consisting of the eggs of immense birds, one of them from a long extinct species. This specimen is twice as large as the egg of an ostrich.

On the third floor will be found the local and foreign entomological collection consisting of twenty-five cases of labelled and perfect specimens, charts, photographs, models, etc. There are four rooms on this floor devoted respectively to minerals and gems and precious ores, paleontology (fossils), Indian relics and historical objects.

The geological and mineralogical collections are very fine. Many gems and beautiful mineral specimens from all over the world are exhibited, together with interesting photographs, models of topography and explanatory matter. A large series of fossils illustrates the past history of life on the

earth, and models show such interesting things as the evolution of the horse from its tiny ancestor and extinct reptiles of the Connecticut valley.

Another new exhibit on this floor, just started, is the series of models in natural colors of the common fungi of Connecticut.

The collection of Indian relics and culture, mostly supplied by Mr. George P. Rowell of Stamford, is one of the finest in the building, consisting of many thousand chipped flints, arrow points, paintings, celts, agricultural implements and specimens of beadwork. This collection is not as yet in its final arrangement.

The historical collection is also very fine and illustrates the culture of our colonial days. A short inspection of this collection gives one a clear insight into the homes and lives of our forefathers.

All the magnificent material that constitutes the collections of the Bruce Museum is displayed in the finest obtainable museum cases of plate glass and steel, which have cost a great outlay, both in labor and money, but the results obtained are a compliment to those who have faithfully worked to make this institution unique among museums.

French Boy Scouts and God in Nature.

One of our good friends sends a copy of "The Catholic Transcript" of Thursday, April 7, marking an article that calls attention to the fact that in France the Roman Catholic Boy Scouts are taught and urged to recognize God in nature, thereby cultivating a love of plants and animals. The scoutmaster in planting a camp offered a prayer from which we quote as follows:

"Grant that my word may be a light to their path, that I may show them Thy Divine imprint in the world Thou hast created. Teach them Thy holy law, and lead them on to Thee, my God, into the camp of rest and joy where Thou hast set Thy tabernacle and ours forever."

Dr. Edward F. Bigelow has been recently elected vice-president of the New York Public Lecture Association, of which he has been a director for several years. He has been a lecturer for the New York Board of Education for twenty-one years.

Preserving Connecticut's Wild Flowers.

From Miss Amy R. Thurston, Litchfield, Connecticut, Secretary of the Connecticut Wild-flower Preservation Committee of the Garden Club of America, we have received a series of six articles explaining the reasons why certain of our Connecticut wild flowers are in danger of extermination and in need of protection from the public. The flowers for which special appeal is made are lady's-slippers, Calopogon, pogonia and other common orchids. There is also an appeal for mountain laurel, trailing arbutus, hepatica, jack-in-the-pulpit, trilliums, Solomon's seal, fringed gentian, cardinal flower and several others.

An appeal is also made to stop the abuse of parks and of favorite sites for picnics by the scattering of lunch refuse. It is pointed out quite emphatically that many persons are in the habit of carving names and all sorts of designs, notably that of the human heart, on the beeches. It is claimed that such disfigurement may be seen on almost any fine beech of roadside or park.

This statement holds true of the wonderful beeches at the entrance to Bruce Park in Greenwich. There are two of the finest beeches in all Connecticut, and they should be a great pride to every resident of this vicinity. It is most astonishing that these beautiful, magnificent trees should have been desecrated.

Here at ARCADIA we are trying to develop the beauty spot of Sound Beach, making it so far as possible a

harmony of wild and cultivated. Yet innumerable passers-by seem to look upon it, especially the portion devoted to wild nature, as a dumping ground for all sorts of trash. It requires the labor of some one every two or three days to pick up papers, cigarette boxes, cracker boxes, milk bottles thrown upon our grounds. It is indeed discouraging that so many have no regard whatever for the appearance of park or village. It makes one wonder whether we are not only just beginning to emerge into the era of civilization and still have to learn a number of the fine things of life. It should not require so much time and effort to protest against the desecrations of nature. Why is it that many choice and rare flowers are being pulled up by the roots and idly torn to pieces? What is the innate characteristic of the human being that will do that kind of thing?

We even have to caution some of our apparently most appreciative visitors at ARCADIA against picking the best and rarest things. It seems not to be a lack of appreciation. Several times a choice thing has been picked before we could state our rule that nothing is to be picked. Startling experiences along that line make us appreciate the great task before us.

The most astonishing thing of all, however, is to see passers-by look with admiration upon ARCADIA and even to hear them make kindly remarks as to its beautiful appearance, and then to see them leave on its grounds candy wrappers, papers, cigarette boxes and the like. We have come to have a



MRS. FANNIE E. BLAKELY'S PUNGALOW IN LOWER CALIFORNIA.

See her article, "Spring in Southern California," on page 181 of our number for May, 1921.

kinder feeling toward these infants of the human race. They are evidently just beginning to learn and have not progressed very far in their lesson. Fortunately, however, the beginning class is small. The great mass of humanity will thoroughly sympathize with us in our endeavors to beautify Sound Beach and with this Wild-flower Preservation Committee in the effort to save the fast disappearing choice plants of the state.

Jack's Cousin.

BY WILLIAM H. HUSE, MANCHESTER, N. H.

We are all acquainted with Jack standing in his living pulpit with his striped sounding board overhead and

wild calla that floats on the water of our northern swamps and sends its roots down to the mud below. There is another cousin that pushes its mottled spathe up through the frozen ground and ice-cold water and offers its pollen to the early bees. These little workers are in nowise repelled by its odor that is disliked by the delicate and that gives it its name of skunk cabbage.

It is of still another cousin that I write—one that lives in the distant Pacific isles and is found here only among the tender plants in greenhouse and garden. Its name, as registered in the botanists' card catalogue of vital statistics, is *Amorphophallus ricieri*. There may be some who prefer its common



LOOKS LIKE HUGE JACK-IN-THE-PULPIT!

preaching silent sermons not intended for human ears. What are his sermons that enter the human understanding without sound waves? Well, that is another story. We are hunting now for his relatives. He has a cousin in the

name, which is snake palm, even though it is not a palm and only remotely suggests a serpent.

The summer before the appearance of the blossom that is shown in the illustration a leaf was produced with a

petiole two inches in diameter at the base and about two feet tall. At the top three branches divided and subdivided until the top was about four feet in diameter, well covered with leaflets and an ornament to the garden.

Late in the following winter a bud started to grow from the dry corm and rapidly developed into the mammoth blossom that excelled the calla in size if not in beauty and perfume. When full-grown it lacked but an inch of being four feet from the top of the corm to the summit of the dark purple spadix. The spathe was nearly eighteen inches in height and nine inches in diameter at the top. The stem was mottled much like the petiole of the leaf. Its appearance was attractive but not so much can be said of its odor. Its relationship to the skunk cabbage was unmistakable. Two other cousins belonging to the same genus are known to the hothouse world. The *A. similense* is a smaller plant with all the odor of the larger condensed into a small space. The *A. titanum* produces the largest flower known with a spathe six feet in depth and nearly three feet in diameter.

Micro-Land.

BY THEODORE H. COOPER, BATAVIA, N. Y.

Any one wishing to travel in little known parts of the world and see rare sights, unusual forms of animal and plant life, weird things which he has never dreamed existed, may do so at very little cost. It may be well to mention that this land has never been fully explored, so it is possible that you will see something new.

You will need some equipment to make this excursion but the equipment will be the only expense as you will not have far to travel. The necessary equipment may be bought from the Bausch & Lomb Optical Company, Rochester, New York. It consists of a microscope and some slides and cover glasses. If you are able to get a polarizer and analyzer, microtome and dissecting instruments so much the better, but before buying these it will be well to procure a book or two on microscopy and learn how they are used.

On the fifth of July last year my brother and I took a walk in the country after supper and I brought home, among other things, some tiger lilies.

I put them in some water in a beaker in my laboratory and after about a week put a drop of this water under my microscope. I found three different kinds of animal life in it. One kind was very plentiful. It would stretch out its long "tail" and then suddenly contract as quickly as a piece of rubber band.

A friend of mine, Donald Mayled, called upon me one night and I asked him if his knife was sharp. He assured me that it was, but when we looked at it through the microscope it looked like a crosscut saw.

It is not my purpose here to write a discourse on the methods of microscopy but perhaps one or two points are so important to the beginner that it would not be advisable to omit them. In the first place a compound microscope is an instrument which requires a reasonable amount of care in handling and should not be left in a place where dust may collect on it or an inexperienced person try to use it and run a chance of ruining the objective. Never try nor allow any one else to try to take apart the system of lenses in the objectives. When not in use keep the instrument in its case or under a bell jar.

I do not expect that all who read this article will purchase microscopes, but I hope a few at least will be inclined to learn more about micro-land and trust they will not consider their time and money lost which they spend to visit it.

The Green, Green Grass.

Who will sing the green, green grass
Upspringing everywhere?
Changing the brown and barren land
Into a garden fair.

Carpeting the valleys wide,
Covering the hills,
Bordering with luscious growth
Little purling rills;

Freshening the orchard slopes,
Beautifying lawns,
Making old earth shine like new,
In sunsets and in dawns;

Turning fields to verdant slopes,
Meadows to fairy floors,
Creeping, creeping slowly up
To our very doors.

The while its beauty, spread afar,
Joy to all doth bring,
The brilliant emerald warp it forms
For the pattern of the Spring.

—Emma Peirce.

TO KNOW THE STARRY HEAVENS

The Heavens in July.

By Professor Samuel G. Barton of the University of Pennsylvania.

IF we continue the arc formed by the stars in the handle of the big dipper in Ursa Major we follow a stream of stars in Bootes to the brilliant red star, Arcturus, at A. A further extension of the same arc leads us to another bright star, Spica of Virgo, at B. Some months ago actual measurement

The result showed that Arcturus was 19,000,000 miles in diameter and its volume roughly 11,000 times that of the sun. As these results were much more difficult to obtain than those upon Betelgeux the achievement is more remarkable. They indicate, however, that there are but few stars whose diameters



Figure 1. The constellations at 9 P. M., July 1. (Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.)

showed that the diameter of Betelgeux or Alpha Orionis was 300,000,000 miles. The second application of the same method was to the star Arcturus which was supposed to be the second largest star but much smaller than Betelgeux.

are large enough to be found by these methods.

If we draw a line from north to south on our map we find that it passes through the serpent constellations. Lowest in the south is the well marked

constellation Scorpio (the scorpion) with its bright reddish star Antares. Next above this are Ophiuchus (the serpent holder) and Serpens (the serpent which he is holding). In this case we have one constellation crossing another. Just south of the zenith is Hercules, the kneeler, upside down as we see him, with his head toward the head of Ophiuchus and his foot resting on the head of Draco, the dragon. Hercules holds a branch in his left hand in which serpents are entwined. Draco is one of the circumpolar constellations which may be seen nearly at all times but is in its best position this month. It will be seen to make a semicircle about the little dipper, Ursa Minor, and then turn and end in a diamond-shaped head just north of Hercules. This arrangement of men and serpents in these constellations can scarcely be accidental. No theory as to the reason for the arrangement is well established. Attempts have been made to trace the story of the Garden of Eden in these constellations.

* * * * *

The Planets.

The positions of Jupiter and Saturn are marked on the map. This is the last month in which they may be seen well. Venus is a brilliant morning star. It is at its greatest western elongation July 1. It may be seen in the east before sunrise. Mercury is similarly at its greatest western elongation July 28. On July 4 the earth is at the point of its orbit farthest from the sun. At this time the earth is about 3,000,000 miles farther from the sun than in January. In order to show the nature of the earth's motion the orbit of the earth is usually represented as an ellipse in which the flattening is much exaggerated. The real orbit of the earth is so nearly a true circle that if accurately represented in a figure a very minute examination would be necessary to show the departure from a true circle. The boundary of the map in Figure 1 is a true circle. If the earth's orbit were represented by this circle the representation would be accurate to about one-thousandth of an inch.

The moon in its path among the stars always hides the stars behind it. At times it passes between us and some of the brighter stars—occults them, as astronomers term it. Two such occultations occur this month. On July

19 Rho Sagittarii disappears behind the moon at 3:11 A. M. as seen from Washington and at nearly that time elsewhere. It remains hidden forty-one minutes. On July 30 Delta Tauri is similarly occulted. This occultation begins at 4:08 A. M. and lasts seventy minutes.

* * * * *

Do the Stars Move?

Do the stars move? Whatever is meant by the question the answer is yes. Our map, Figure 1, shows the positions of the stars at 9 P. M. July 1, for a latitude of forty-five degrees north. Change any of these factors and the appearance of the sky will be different. The earth rotates on its axis, carrying the observer with it, once in a day; hence everything not on the earth will appear to move in the opposite direction just as the scenery appears to move when riding in a train. For this reason the stars appear to rotate from east to west as though fixed on a great sphere whose axis is that of the earth. This axis of rotation of the sky is now near the north star. For this reason the stars are not in the same position at different times of the night. Then, too, the earth moves about the sun. As the direction of the sun changes due to the earth's revolution about it so does the direction opposite to the sun change and this is the direction in which we see stars; that is, at night. Hence as we are looking in a different direction at night at different times of the year we see different stars. For this reason the stars we see at 9 P. M. July 1 are not the same as those we see at the same time August 1. On August 1 at seven o'clock they will be in the same positions as they were at 9 P. M. July 1, for in a month the earth has moved one-twelfth of the way around in its orbit, a month being one-twelfth of a year, and one-twelfth of the twenty-four hours, the time of the earth's rotation, being two hours. These are the large changes in the positions of the stars and the only ones considered in the map for a fixed latitude. Anything which changes the position of the observer relative to the stars will change their apparent positions.

The next most important motion of the earth is a gradual change in the direction of the axis of the earth. Much as a spinning top changes the position of its axis of rotation so the rotating

earth changes its axis of rotation. At present the axis lies in the direction of the north star (Polaris), E, Figure 1, but it was not always so and will not always be so. The pole moves in a circle of radius twenty-three and one-half degrees about a center at C (Fig-

which we now see, including Sirius, the brightest of all the stars, and a portion of the constellation Orion. The summer constellations now will be winter constellations then and vice versa. The north pole of the sky is now about seven minutes closer to the pole star

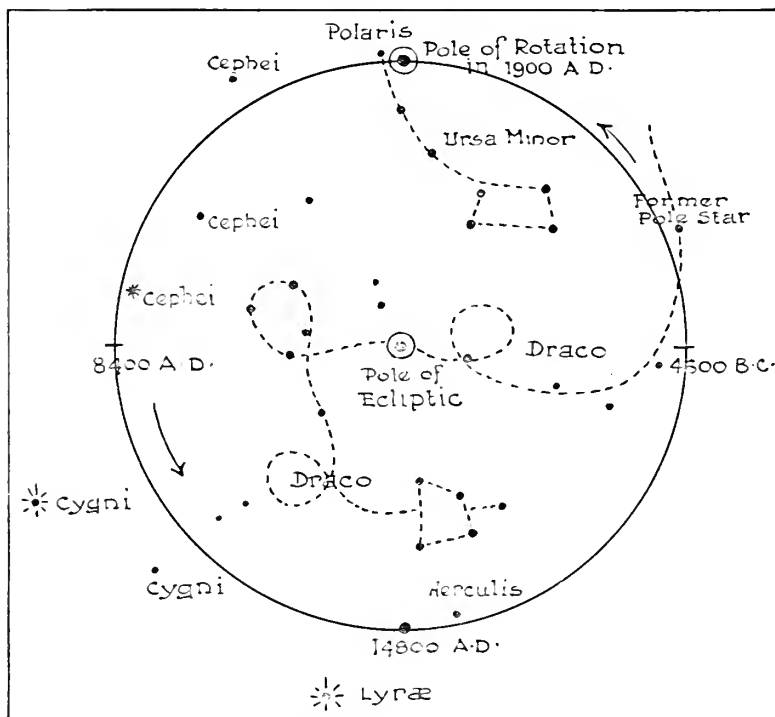


Figure 2. Past and future positions of the celestial pole.

ure 1). The circle is shown in Figure 2. The complete motion in this circle requires about 26,000 years. The axis will be farthest from its present position in half of this period or 13,000 years, when Vega at D, Figure 1, will be the bright star closest to the pole but by no means as close to the pole as our present pole star. At that time Polaris applied to the present pole star will be an anachronism.

This motion of the axis makes slow but sure changes in the apparent positions of the stars. In 13,000 years our present pole stars will be forty-eight degrees from the pole, moving about it much as Vega now does. The dippers would hardly be called circum-polar constellations. We should then be able to see the star nearest to the sun, Alpha Centauri, and the Southern Cross, but we would not be able to see some of the choicest portions of the sky

than it was in 1900. The difference, which is now sixty-seven minutes, will be reduced to its smallest amount, about thirty minutes, in two hundred years. After that the two separate. When this motion was discovered in 125 B. C. the pole was twelve degrees from the present pole star.

All of these motions and a number of others are caused by motions of the earth and are not motions of the stars themselves. The stars change their positions by very small amounts due to motions of the stars themselves, but these motions are so very slow that very long periods of time are necessary before the change could be seen with the naked eye.

How matchless Nature's beauties!
How blind unseeing eyes!
From out our lives, how tragic
So much to sacrifice!

—Emma Peirce.

What is the Weight of Our Atmosphere?

BY CHARLES NEVERS HOLMES, NEWTON,
MASSACHUSETTS.

We all know that the atmosphere consists of nitrogen and oxygen, mixed with several other gases. Of these gases, oxygen is somewhat heavier than nitrogen but, as we are well aware, air is very light; indeed, water is 773 times heavier than air. Nevertheless, air has weight, and the total atmosphere has an enormous weight. The reason why we are not instantly overwhelmed by atmospheric pressure is that its *inward* pressure is counteracted and balanced by its *outward* pressure. However, if we climb a mountain we are sometimes troubled when the air pressure outside of our eardrum becomes less than the air pressure inside of our eardrum.

The atmosphere has been estimated to extend about 300 miles above our earth's surface. It covers a total terrestrial area of 197,000,000 square miles. Such being the case, it seems a little less remarkable that each square inch of our body is receiving a counteracted and balanced pressure of *almost* 15 pounds. That is to say, since the body of an average man possesses about 1,900 square inches, his body is sustaining a total neutralized pressure approximating 14 tons! Or, in other words, a surface as large as a square 20 feet by 20 feet—400 square feet—would receive a counteracted atmospheric weight of about 423 tons. If only one-half of this 423 tons' energy could be applied to a movable surface 20 feet by 20 feet—if only one-fourth of this atmospheric pressure could be utilized—what a revolution in aeronautic science would result!

It has been estimated that the total volume of our atmosphere weighs approximately $1\frac{1}{1,200,000}$ the weight of the terrestrial globe. Now, since the weight of the terrestrial globe has been satisfactorily approximated at 6,000,000,000,000,000,000,000 tons, it follows, from that estimate of $1\frac{1}{1,200,000}$, that the total volume of our atmosphere weighs about 5,000,000,000,000,000 tons. Let us verify this estimate. The barometer has proved that at sea level our atmosphere exerts a pressure of about $14\frac{7}{10}$ pounds per square inch. It is certain that *all* of the atmospheric weight must press upon the 197,000,000

square miles of terrestrial surface; that is, upon about 790 quadrillion square inches. Therefore, if we multiply the earth's surface of about 790 quadrillion square inches by $14\frac{7}{10}$ pounds (the *average* atmospheric pressure), we obtain the approximate weight of our atmosphere—5,695,000,000,000,000 tons. This weight of 5,695 trillion tons is greater than the older estimated weight of 5,000 trillion tons, and is probably nearer correct. That is, the total weight of our atmosphere approximates $5\frac{7}{10}$ quadrillion tons.

We may verify these figures another way. It has been calculated that if the whole of our atmosphere were concentrated to sea level density, it would rise about 26,000 feet instead of 300 miles. Such a concentrated atmosphere would contain approximately 141 quintillion cubic feet. Now a cubic foot of air weighs about 1.293 1000 ozs. Accordingly by multiplying 141 quintillion cubic feet by 1.293 1000 ounces, we obtain 182 313 1000 quintillion ounces, which, divided respectively by 16 ounces and 2,000 pounds, approximate 5,695,000,000,000,000 tons, which verify the preceding calculation very closely. It must be admitted, therefore, that our earth's atmosphere has a tremendous weight, although its weight approximates only $1\frac{1}{276}$ that of the terrestrial waters.

The Evergreen Wood.

In the evergreen wood it is always June,
Perennial freshness reigns,
And not a footfall can be heard
As we saunter through its lanes.

For carpet moss, both thick and soft,
Is spread from tree to tree,
Its emerald freshness a delight,
As far as eye can see.

The spruces and the fragrant fir,
That fill such haunts as these,
Are overtopped by lofty pine,
The king of forest trees.

And at their bases nestle ferns,
As in the Summertime,
For Winter ferns, like conifers,
Are ever in their prime.

Bright poly-podys cushion rocks,
Inviting us to rest,
Which we are never loath to do,
At their unique behest.

Yes, Summer dwells in the spicy wood,
E'en to the end of the year;
Until it dons its ermine white,
And gives us Winter cheer.

—Emma Peirce.

EDITORIAL

"The Oologist."

Dr. Frank H. Lattin was born in Orleans County, New York, and at a very early age evinced an intense love for natural history. Like all boys of the late "70's" and early "80's" he began by "making a collection of birds' eggs." Of an intensively active mind and body, he soon outstripped the other boys of his locality, and in May, 1884, issued the first number of "The Young Oologist," an unusually well gotten up boys' paper of fourteen pages, the first article in which was from the pen of the millionaire naturalist, J. P. Norris,



FRANK H. LATTIN.

of Philadelphia, who in his day amassed the leading private collection of American birds' eggs.

Lattin published his "Young Oologist" monthly in two volumes until June, 1885, when it suspended publication only to reappear in a January-February, 1886, number as "The Oologist."

He continued this publication of "The Oologist" regularly until May, 1886, when he took into partnership the well-known naturalist, Walter F. Webb, of Rochester, New York. During this time Webb became without doubt the leading dealer in oological specimens in the United States, and made a wonderful display of these specimens at the World's Fair at Chicago in 1893. In May, 1894, Lattin again resumed entire ownership of "The Oologist." He continued uninterruptedly until 1904, when he took in, as editor and manager of the magazine, Ernest H. Short. During the period from 1886-1904 Lattin was truly the leading oologist of the United States, and "The Oologist" during that period was unquestionably the leader of its class.

Practically every student of birds, their nests and eggs of the present day was in his time a subscriber to Lattin's "Oologist" as well as a patron of it. And to this day it is no uncommon thing for the present management of "The Oologist" to receive mail addressed to "F. H. Lattin," saying the writer was a patron of his twenty-five or thirty-five years ago, or an old subscriber to "The Oologist," and inquiring if it is still published.

After Lattin retired from the active management of "The Oologist" he became the leading physician of his territory and later became much interested in horticulture, particularly apples, for which Western New York is famous. Making his usual success of this apple business, he became connected with most of the societies connected with horticulture in Western New York, and a Life Member of the New York State Horticultural Society. In recent years Dr. Lattin has been much in politics, having been elected and re-elected a member of the New York Legislative Assembly, where he is now. An evidence of his popularity in his home district is the fact that each election, seven or eight in number, has been by an ever increased majority. In the New



NEST AND EGGS OF ESCONDIDO PAIR OF GOLDEN EAGLES WITH EDITOR OF THE OOLOGIST AT NEST.

York Assembly Dr. Lattin has taken his usual front rank position, and is one of the influential members of that body.

On January 1, 1900, Ernest H. Short, of Chili, New York, took over the ownership of the magazine, having had editorial control and management from 1904, during which time the magazine

suffered much in appearance, prestige and patronage.

In March, 1900, Short sold "The Oologist" to R. Magoon Barnes of Lacon, Illinois, who has continued its publication ever since as owner, publisher and editor. The change was for the better, and it now enters upon its

Volume XXXVIII, January 1st, 1921, secure in its field as one of the leading ornithological publications in the country, as well as the only publication in America devoted to oology. Its subscribers are found in every state in the Union and most foreign countries.

Mr. Barnes, the present owner of "The Oologist," is a lawyer by profession, and an ardent bird student and collector, having now the largest private collection of North American birds' eggs in existence outside of The United States National Museum. He is also Curator of Oology of the Field Museum of Natural History of Chicago, and has but recently completed on his home place at Lacon a private museum building fifty by thirty-two feet in size with two floors and a basement all fully equipped.

"The Oologist" has outlived about a hundred similar amateur bird publications that have been started, flourished for a time and died. Truly there must be a "place in the sun" for the little "Oologist" to have enabled it to outlast so many of its kind, and to live to begin its thirty-eighth annual volume. There is no magazine known in which the subscribers individually seem to take a more personal interest, or between which and its readers there is a more real bond of sympathy.

The Little Animals' Point of View.

Our good friend, Mr. Theodore H. Cooper of Batavia, New York, sends us an interesting account of his explorations of a marsh in company of Don Mayled, a fourteen year old, good-natured, intelligent boy, who is rapidly developing an interest in nature. Mr. Cooper, who in our April number was pictured in his library, tells of his success in interesting his friend by showing him how much the pussy willow looks like real fur when viewed under a magnifying glass. He points out that the picture of a puddle has upon close study revealed a great many interests and looks like the approach to the bend of a small stream or a clear spot in a swamp with bushes on each side and yet it is only a puddle three or four feet across. Setting up the camera much lower than the point of view of the human observer the camera lens portrayed some interesting reflections, and he wisely tells us when we find a pool to look at it

from various heights. When we lower our eye to the height of a mouse we see an entirely different landscape than when standing.

This also calls to the mind of the editor a suggestion that one may travel far and wide in varied scenery by photographing any one place at different points of view at different seasons of the year.

It is not necessary to travel far to get foreign lands. A man once saw his friend peering in the grass and upon inquiring what he was doing received the reply, "I am traveling in a foreign land." Whittier somewhere says something similar, which I am quoting:

"The eye may well be glad that looks

Where Pharpar's fountains rise and fall;

But he who sees his native brooks

Laugh in the sun, has seen them all."

We especially like this view of Mr. Cooper and his friend. It is exactly what we are trying to bring out in our Rest Cottage here at Arcadia, the spirit of the Japanese in their nature study. A single flower in a vase affords enough joy for a day. I am glad that these two young men have found the joy of studying a little pool in the dried grass in a swamp.

Let me say to other boys that there is more in a pool than chasing frogs and throwing stones at the turtles and yelling like a lunatic if you happen to see a snake. The pool itself is joy enough for a day. I wish I could get my young friends everywhere to realize this point of view that Mr. Cooper and his young friend are so well portraying.

A Robin's Unique Nest.

BY A. ASHMUN KELLY, DOWNINGTOWN, PA.

When our women folks went to take in the wash they were surprised to find that some choice lace that had been placed on the line was missing. Later they observed a robin sitting on the line with his gaze directed to a garment to which he soon flew and began to pull at a part of it. Knowing that a pair of robins had built a nest in the tree near-by, the folks thought that perhaps the birds had taken the lace into their nest. Investigation proved this to be correct, as the lace formed a part of the nest walls. After the robins were done with the nest the lace was recovered, but in hardly a good condition.

America-Japan Magazine.

We have been favored with several back numbers of "America-Japan," published in Tokyo, Japan. This magazine contains much interesting reading and is evidently doing good work in helping Japanese and Americans to understand one another. Of that understanding there is need. Here at ARCADIA we have always believed, as evidenced by the establishment of our Little Japan, in cultivating friendly relations with that rapidly growing nation, as we believe in the innate goodness, faithfulness and effectiveness of the Japanese people. But more than all that, we believe that they have an ideal point of view in their love of nature and its aesthetic portrayal. The trouble, so far as there is any trouble and I do not believe there is much, is that we often misunderstand the Japanese methods and possibly they sometimes misunderstand ours. As this magazine so nicely puts it, "The story used to be told of the good missionary who preached long and earnestly to a Japanese audience about the dignity of human life. But as he unfortunately said *ninjin* (carrots) instead of *ningen* (mankind) his polite audience misunderstood him altogether. He was talking of one thing and they were thinking of something very different."

The editor of THE GUIDE TO NATURE especially appreciates "America-Japan" as a magazine of peace and good will, but in addition he personally appreciates it because John Trumbull Swift, schoolmate of the editor of THE GUIDE TO NATURE, is editor of "America-Japan," in Tokyo. John, you work away at the big Japanese end of the line and we will tell our people here in Little Japan the good qualities of your adopted people and show our people the artistic decorations of our Rest Cottage by your people. As Thoreau said that there should be a little of spring in all seasons, so I think the more of Japan you can scatter to our Little Japan over in America the better we will hyphenate America-Japan.

Nature's Mirror.

BY BERNARD E. JOHNSON, GLADYS, VIRGINIA.

Where the water ripples onward

On its journey to the sea,
Still traveling downward, onward,

It forms a mirror for nature and for me.

Nature in Japan.

[From a personal letter from a schoolmate, Professor John Trumbull Swift, to the editor of this magazine. Not "to the Editor" but "My dear Ed." How much a slight variation means!]

Nature in Japan is particularly attractive because Japan is an island country and her picturesque scenery is all close together within a comparatively small area. Her hills and valleys are close to the sea. Paths lead along almost every ridge so one has everywhere glimpses of inland mountains or blue waters which give to walking a double pleasure. What increases this pleasure immensely is the simple fact that there are no fences and one may walk almost anywhere in the country.

Life in Japan is, according to the nature of the people, largely arranged according to convention. In the winter the thing to do is to go out into the suburbs to some garden to view the plum blossoms which begin to bloom in January. What is admired is not a young tree full of bloom, but some old stump with just a half dozen scattered flowers upon it. In April we have the flowering cherry which is the national emblem of the Japanese people, beautiful but short-lived. The trees are so full of bloom that when the wind strikes them we have the "cherry snow" which is always admired. Of cherry trees the weeping cherry is the most beautiful. I remember one seen years ago in the mountains, a wild tree, tall and slender, as graceful as any willow, standing like a great fountain of coral pink against the dark green of the hills about it. The August flower is the morning-glory, the fad of elderly gentlemen who devote much time to cultivating the plant in pots, and developing it in size and color. Of the latter there are a great variety of tones. To secure the best results one has to get up at midnight and water one's plants so that the flowers may be fresh and full when they open at sunrise.

The autumn flower is the chrysanthemum which is also the imperial flower of the country. Then it is that the wonderful gardens of the Akasaka palace in Tokyo are opened to favored visitors and one wanders along winding paths under ancient pine trees interspersed with brilliant maples until the spaces devoted to the chrysanthemums are reached. Many tourists come in the

autumn specially with the hope of being present at this function.

These are the four cardinal flowers of the country, but much is also made of the azaleas, the magnificent giant peony, the yard long wisteria and the iris. Gardens devoted to these flowers are favorite resorts in the springtime. For those who can get away from town in May, certain mountain slopes are flowered with the lily of the valley which grows wild and in great profusion. In speaking of flowers we must not forget the remarkable blossom of the monkey slipper. This tree, with its gnarled and contorted trunk apparently devoid of bark and so smooth that even the monkey slips when he tries to climb it, puts out bunches of deep pink flowers which last from late July even to October, giving the tree its second name of hundred day flower.

To me, as I think I said to you some years ago, it is a most interesting fact that the mountains of Japan produce a flora that has many points of contact with that of New England. It is strange that this resemblance, as it were, should thus skip America's Pacific slope and touch earth again on the corresponding eastern coast of the American continent. Tokyo and other places on the sea level have almost entirely an ever-green foliage. Pines and live oak of various kinds with the cryptomeria make up the greater part of the trees. Two thousand feet up on the mountains one gets the white and black birch, the beech, chestnut, hazelnut, oak and the home flowers. You know I found the trailing arbutus some twenty years ago when climbing the volcano, Yake-dake, in the Japanese Alps.

Two or three hundred miles south from there, one spring, Mrs. Swift and I were following the mountain path when we saw something which struck both of us as so funny that we broke into a laugh. Many mountains are re-forested with cryptomeria trees whose deep brown trunks give a peculiar warm and artificial appearance to the mountain side. Our little footpath led amongst these to the edge of the forest through which the sunlight broke as through the great windows of some old cathedral and right ahead of us on either side of the path, looking east, were a lot of lady's-slippers, while plum in the middle of the path facing

them rose a sturdy jack-in-the-pulpit. I often think of that sylvan congregation.

In Japan the common variety of the jack-in-the-pulpit is called the "snake's looking-glass," because the spadix is prolonged several inches outside the spathe, sometimes even down to the ground, and looks not unlike a young snake that has stuck its head into the flower to admire itself.

"Divorce Between Matter and Form."

English has in recent years developed into a department by itself and as a consequence the other departments are left without any English. One wing of the faculty devotes itself to form, the other wing to matter. The student who divides his time between them rarely gets the two things together, rarely realizes that they belong together. This is no wonder, for his instructors sometimes do not believe that the two things belong together. The litterateur sneers at the scientist and the scientist returns the compliment with interest.

The more the student concentrates his work the worse he comes out. If he specializes in language he acquires an elegant style but has nothing much to say with it. If he specializes in science he will know a great deal but he will have no style about him. The result is that the graduating class of a college has come to resemble in mental equipment the natives of the South Sea Islands where, the supply of clothing being short, they divided it up and appeared at church half of them wearing coats and the other half trousers. This divorce between matter and form, between the idea and its expression, is a serious defect of our educational system.—By Edwin E. Slosson in "A Plea for Popular Science."

Mere size does not count for much with Nature; she is all there, in the least as in the greatest.

But the big-lettered and startling headlines in Nature's book occupy the real nature-lover less than does the smaller print. The big and exceptional things all can see, but only the loving observers take note of the minor facts and incidents.—John Burroughs in "Field and Study."



Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

Reorganization of Pittsfield A Chapter No. 1.

Officers: President, Mrs. A. B. Hawley; Vice-President, Mr. C. Dudley Holman; Corresponding Secretary, Mrs. F. C. Saul; Treasurer, Mr. Warren Phelps.

A meeting was held on October 28, 1920, in the lecture room of the Berkshire Athenaeum for the purpose of reorganizing the Pittsfield (Massachusetts) A Chapter No. 1 of The Agassiz Association. Though there were but six or eight present at that meeting, officers were chosen and plans made for work during the winter. It was so late in the fall that there was not much time for walks into the country, but so far as possible at every meeting we have had on exhibition some specimen from one or all of the three kingdoms.

It was thought best to call upon either residents or visitors to this part of the country to speak to us on various subjects. Mr. Harlan H. Ballard, Honorary Vice-President of The Agassiz Association and a member of our Chapter, spoke to us of the work of The AA and of Berkshire County, Massachusetts, as an especially fine section for the study of birds. It is in the path of the migratory birds and so has the advantage of those nesting here and of many passing through on their way to nesting places farther north. He also called attention to the fact that in the flowers we have those which grow above limestone bottom and those which do not. This peculiar under formation also makes the section more or less rich in fossils. He also told us what he has found out about mushrooms and various other things.

Mr. S. Waldo Bailey, one of our members, is a great help in our study of ferns, flowers and birds.

Mr. F. C. Saul, another member, gave us a lecture on the honeybee, its nature and habits.

Mr. Keegan, also a member, told us of the fish in the lakes of this region and what the state has done in this work.

Mr. Sloper, not a member, told us of the Whitney estate and its importance in relation to the water supply of Pittsfield.

In January we began to bring specimens of birds from the museum and to study the habits and nesting places of the specimens exhibited.

With the coming of spring with all its life and beauties we have taken several walks. One was to see some orchids being raised in Mr. Cooley's greenhouse. Later we were so fortunate as to secure Mr. Lincoln to tell us of the wild orchids of this part of the country. We have enjoyed our walks, and there are many around Pittsfield, for bird study.

The Berkshires being the home of the Indian, Mr. H. C. Darling told us something of the relics which have been found here.

One evening was given to the review of the life and work of John Burroughs, another to the work the Boy Scouts are doing, and another to the carrier pigeon, its training and work.

Those in charge of the museum have asked us to record the incoming birds, both those which nest here and those which are migratory. Through the kindness of the Boy Scouts we have been furnished with a number of bird houses which have been placed in favorable positions by AA members.

Mr. Edward Avis lectured in the auditorium of the high school. The Agassiz members helped advertise and sell tickets for this lecture and it was one to do one's heart good.

We desire eventually to establish a bird sanctuary and to interest more people in the wonderful possibilities of

the study of nature in Berkshire County. Interest and enthusiasm are increasing and our membership is growing.

MRS. F. C. SAUL,
Corresponding Secretary.

Contributions.

Mr. Clarence H. Crandall, Sound Beach -----	\$1.00
"Good Friend" -----	25.00
Mr. Theodore H. Cooper, Batavia, N. Y. -----	3.00
Mr. John D. Chapman, Greenwich -----	10.00
Mr. Charles H. Lounsbury, Stamford -----	5.00
Dr. George E. Vincent, Greenwich -----	10.00
Miss Elizabeth D. Ferguson, Stamford -----	25.00
Honorable Schuyler Merritt, Stamford -----	10.00
Mr. Worcester R. Warner, Tarrytown-on-Hudson, N. Y. -----	15.00
Dr. George F. Kunz, New York City -----	10.00
"Sympathetic Friend" -----	50.00
"A Friend of Dr. Bigelow" (This form of publication by request) -----	50.00
Visitors -----	1.00
Mr. Arthur L. DeGroff, New York City -----	25.00
New York Microscopical Society -----	10.00
Mr. Oliver D. Mead, Greenwich -----	10.00

Financial Report of The Agassiz Association, Inc., ArcAd'A: Sound Beach, Connecticut.

(Accepted by the Board of Trustees at the Annual Meeting on Agassiz's Birthday, May 28th, 1921.)

Summary—Cash Received.

April 1, 1920, to March 31, 1921, inclusive.	
From THE GUIDE TO NATURE -----	\$5,404.82
From Contributions to Little Japan -----	527.53
From Members' Dues, Contributions, etc. -----	1,337.07
Total -----	\$7,269.42

Summary—Cash Paid.

April 1, 1920, to March 31, 1921, inclusive.	
For THE GUIDE TO NATURE -----	\$5,184.15
For Little Japan -----	320.46
For General Expenses and Improvements -----	1,608.11
Total -----	\$7,172.72

Sound Beach, Connecticut.

The above is a correct summary of cash

received and paid from April 1, 1920, to March 31, 1921, inclusive.

(Signed) EDWARD F. BIGELOW,
President.

Subscribed and sworn to before me this 12th day of May, 1921.

(Signed) RALPH P. HOWARD,
Notary Public.

Auditors' Statements.

Stamford, Connecticut.

This is to certify that I have examined the details of which the foregoing is a summary and find all to be correct.

(Signed) CLARENCE E. THOMPSON.

Subscribed and sworn to before me this 12th day of May, 1921.

(Signed) RALPH P. HOWARD,
Notary Public.

I have gone over the record books of The Agassiz Association for the past year, and find them well and properly kept. The expenditures all seem to have been made in the interest of the Association and the furtherance of its aims.

(Signed) HIRAM E. DEATS.

Member of Board of Trustees.

Address: Flemington, New Jersey.

May 28, 1921.

We hear much complaint nowadays of the middlemen in commerce. They are too numerous, it is said, there are too many links in the chain connecting producer with consumer. But in the scientific field the fault is quite the opposite. There are too few middlemen, not enough qualified persons engaged in the transmission of newly discovered truth to the masses. Writers of all sorts have multiplied amazingly and acquired unprecedented skill, with the exception of writers of popular science. In this branch of literary art there is perhaps not an actual decline as compared with fifty years ago, but at least it may be safely said that it has not kept pace either with the advance of science or with the growth of scientific education.—By Edwin E. Slosson in "A Plea for Popular Science."

Water does not taste good to us until we are thirsty. Before we ask questions we must have questions to ask, and before we have questions to ask we must feel an awakened interest or curiosity. Action and reaction go hand in hand; interest begets interest; knowledge breeds knowledge. Once started in pursuit of nature lore, we are pretty sure to keep on. When people ask me, "How shall we teach our children to love nature?" I reply: "Do not try to teach them at all. Just turn them loose in the country and trust to luck." It is

time enough to answer children's questions when they are interested enough to ask them.—John Burroughs in "Field and Study."

WANTED: A GIFT OF \$5,000.

Forty-six years of youthful activities—we are the Association that never grows old or out of date.

Forty-six years of dependence upon the living—we have never deprived any one of the joy and satisfaction of seeing how contributed money was spent, thus inciting to repeated gifts from nearly every one.

Though death has taken from us many of our most liberal contributors, we have superlative faith that somewhere will be found the one to give us the five thousand dollars to be used in a detailed plan under the personal approval of the contributor.

We make moderate amounts of money go a long way. We point with pride to every detail of our record of almost a half century. There have been only two managers of The Agassiz Association, the former for thirty-two years, the present for fourteen, and neither has received salary for the executive management of The AA.

No other charitable and educational organization has a better Board of Trustees. They represent a wide range of territory and interests—characteristic of The AA.

The United States Post Office Department at Washington carefully investigated The Agassiz Association and because of its altruistic, educational and noncommercial purposes awarded a special low rate of postage to its official magazine.

The Treasury Department Internal Revenue also carefully investigated and exempts from income tax The Agassiz Association and all gifts to it.

We have gladly and freely helped many other organizations in their nature interests. We untiringly render free services at ARCADIA to rich and poor, young and old. To us come a wide range of visitors. Our correspondents include every phase of humanity.

We invite detailed investigation.

We need and merit a gift of \$5,000. Do it now. Do not wait until you are dead. We want to give the donor the joy and satisfaction of knowing just how advantageously the money will be expended.

We always have been a lively organization for the living, by the living.

Faithfully yours,

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TREASURY DEPARTMENT

Internal Revenue Service

Hartford, Conn., April 13, 1921.

Office of the Collector, District of Connecticut.
Agassiz Association, Inc., Sound Beach, Conn.

SIRS:

With further reference to your letter of February 28th, 1921, you are advised that the Commissioner of Internal Revenue at Washington, D. C., has considered all facts as presented relative to the activities of your association and has decided that you are exempt from the filing of income tax returns under the provisions of the Revenue Act of 1918.

The Commissioner has further stated that amounts contributed to your association by individuals may be deducted in the income tax returns of said individuals to the extent provided in Section 214 (a) (11) of the Revenue Act of 1918.

Very truly yours,

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H. P. Kjerskog-Agersborg, in "The American Naturalist" for September-October, calls attention to some neglected sea foods on which any ingenious seashider might well experiment. Along with other suggestions, he notes that caviar might be made from the eggs of starfish, the remainder of the body being used for fertilizer. Thus it might become profitable directly as well as indirectly to keep down these pestilent enemies of the oyster. Many peoples in Europe, he points out, eat snails, either steaming them as we do clams in their shells, or as we also treat clams and oysters, removing them from the shell and frying in butter or making broth. We have in this country several large and abundant species of snails, the culinary possibilities of which have hardly begun to be explored.

The various subjects discussed in your magazine are very ably handled. They would be interesting to young and old. I was agreeably surprised at the field covered because it has opened for me new avenues of interest.—C. H. M. Eyre, Pittsburgh, Pennsylvania.



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I am not advocating "nature-faking," or sentimentality, or aestheticism, or any other mode of thought or habit of mind which passes for "love of nature" but is really a form of self-indulgence. I am only suggesting that the time has come when societies for the Prevention of Cruelty to Animals should make way for societies for the Promotion of Friendship with Animals; when the test of a nature-lover should not be whether he knows a golden-crowned kinglet when he sees one, but whether he can love a barnyard rooster as a friend, not merely as a prospective roast; when the test of a dog-lover should be, not whether he can love a pampered, pedigreed winner of blue ribbons, but whether he can love what Sydney Smith called an extraordinarily ordinary dog; and the test of a citizen of the world should be whether he feels, not only his brotherhood with men, but his brotherhood with every lowliest creeping thing that lives and eats and dies on the earth.—By Robert M. Gay, in "The Atlantic Monthly."

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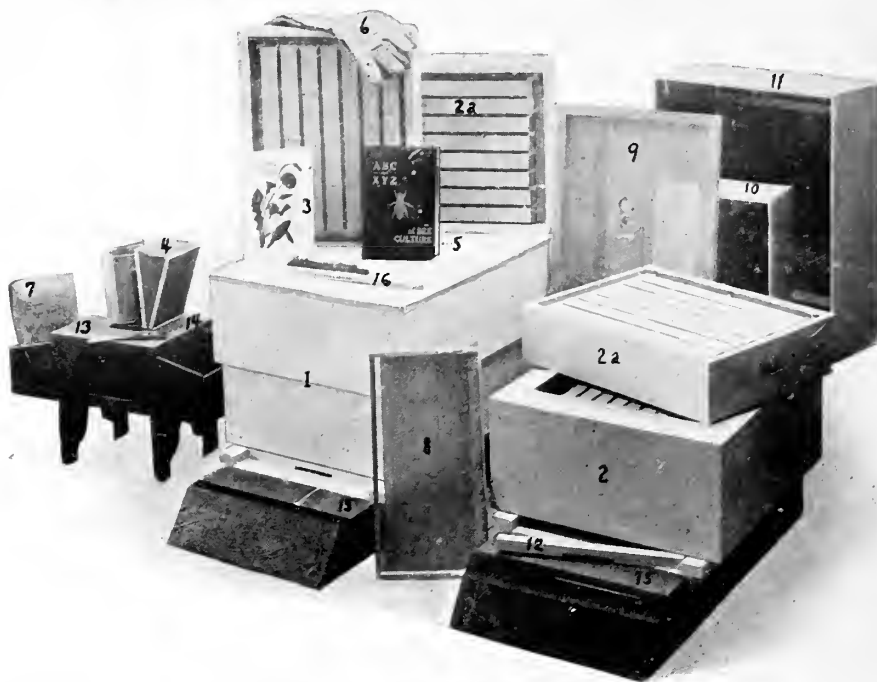
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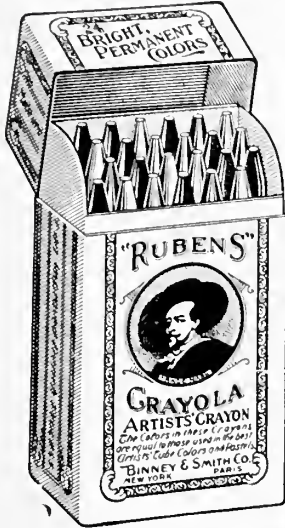
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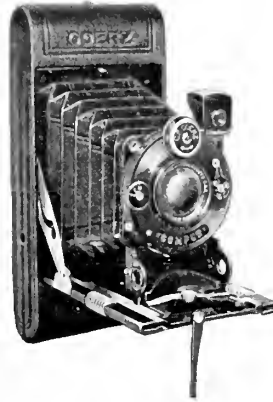
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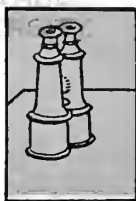
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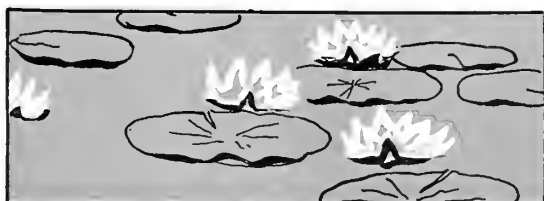
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Edward F. Bigelow, Editor

VOL. XIV AUGUST, 1921 No. 3



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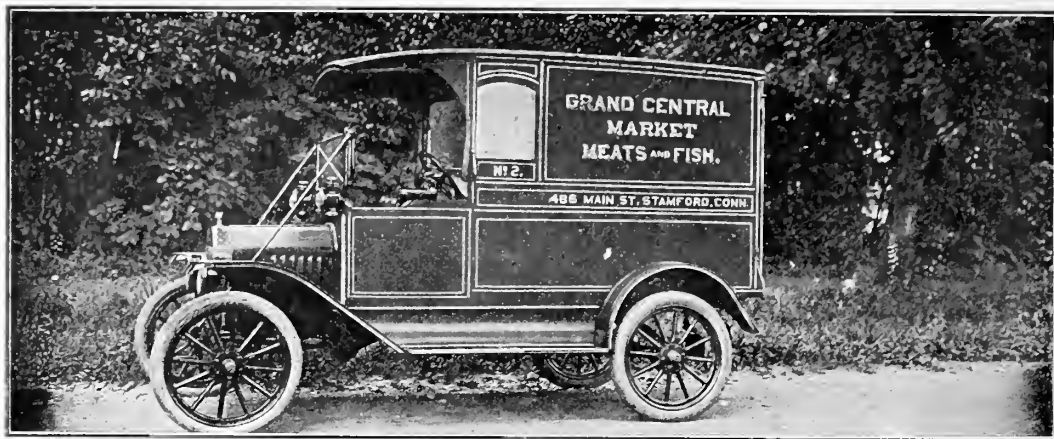
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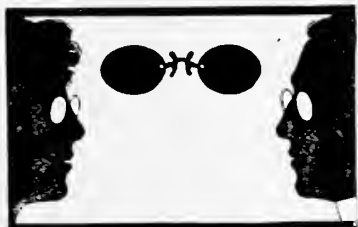
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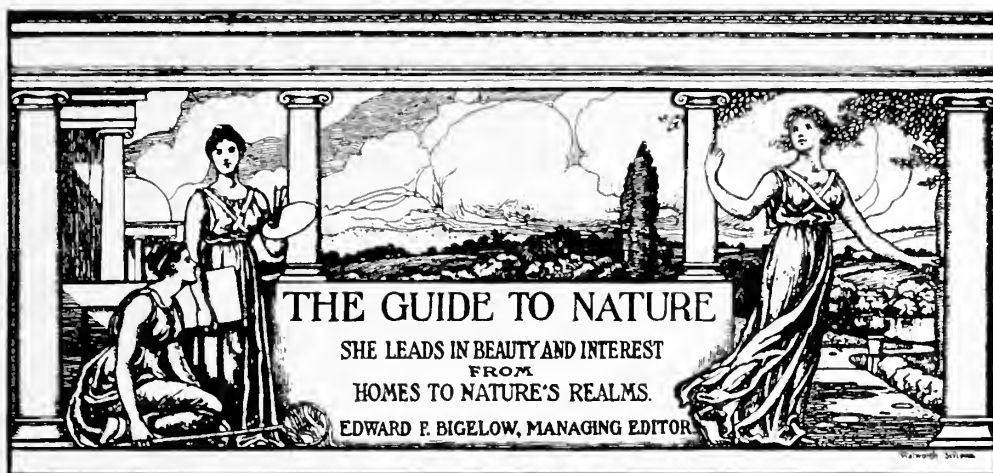
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Volume XIV.

AUGUST, 1921

Number 3

The Nautili

By Charles Johnson, Boston Society of Natural History.

The "Paper Nautilus" (*Argonauta*) and the "Pearly Nautilus" (*Nautilus*), while belonging to the same class of mollusks—Cephalopoda, are very different creatures and represent two widely separated groups. The Nautilus secretes a true shell, divided by septa into chambers with a central siphuncle. The animal has about ninety arms or tentacles, arranged in four groups. When swimming with the tentacles extended radially from the head it resembles a sea-anemone.

The Argonauta is closely related to the Octopus or Polypus and has eight arms. The Argonauta shell is not, strictly speaking, a true shell, but a shell-like structure confined to the female and only partly a secretion of the mantle, the greater portion being formed by the two expanded or velamentous arms. Internal partitions are lacking and the structure serves as a nest for the eggs. The male resembles a small octopus, being less than one-fourth the size of the female. It was not until the middle of the last century that the male was accurately described. There were also heated discussions as to whether the shell was actually made by the Argonauta, or whether the polyp

had not usurped the shell of some heteropod mollusk allied to *Carinaria*. It was the two expanded arms referred to above that partly secrete and partly cover and hold the shell, that were taken for sails by the early authors and that have made the Argonauta famous in both prose and poetry.

"Learn of the little Nautilus to sail,

Spread the thin oar and catch the driving gale." (Pope.)

Some specimens attain a much greater size than others and on this account have brought large prices. A specimen of *Argonauta compressa* Blainv., from the Indian Ocean, in the collection of the Boston Society of Natural History, measures 10 $\frac{3}{8}$ inches in its greatest diameter. It is said to have cost the donor, Col. Thos. H. Perkins, \$500. (See *The Nautilus*, vol. 33, p. 74, 1920.) There is also a very large example of *Argonauta nodosa* Solander, in the American Museum of Natural History, New York, that measures 8 $\frac{5}{8}$ by 11 inches.

One species, *Argonauta argo* var. *americana* Dall, is frequently found on the Florida coast. It is occasionally carried northward by the Gulf Stream, to meet an untimely end in the cold north-

ern currents. A living specimen was captured at Long Branch, N. J., in August, 1876. (See *American Naturalist*, vol. XI, p. 243.) Prof. A. E. Verrill records and figures a young living specimen of this species, captured while swimming at the surface about 100

How Did the Dog Get There?

BY F. H. SIDNEY, WAKEFIELD, MASS.

Albert Miner, a Boston and Maine Railroad yard conductor who lives in Somerville, Massachusetts, had an unusual experience with a Belgian shepherd dog. When Miner was homeward



THE NAUTILUS.

miles south of the eastern end of Long Island. Shells of this species, some of them entire, were dredged by the steamer *Fish Hawk*, south of Martha's Vineyard in 64 to 365 fathoms (See *Trans. Conn. Acad. Sci.*, vol. 5, p. 364, 1881).

The writer is indebted to the Boston Society of Natural history for the use of the accompanying cut.

Persons who have been most successful in persuading the trailing arbutus to grow in captivity recommend a north or northwest exposure on the borders of woodland, and a fairly dry soil. The land must not be "sweet," and must never be limed. Most fertilizers are under suspicion, but epsom salts is favored both for arbutus and for laurel and rhododendron.

bound, he ran across this dog wandering about the streets in Brest, France. He petted it and bought doughnuts and fed it. The dog tried to follow Miner aboard ship but was unable to do so. A month after Miner landed in America, he found this same dog on his doorstep in Somerville. He hasn't the least idea how the dog made his way over from Brest and out to Somerville, but he still has the dog and would not part with it for any amount of money.

The shrubberies fairly light the park

When blossom time is here;

In winter they made a shining mark,

When days were short, and nights were dark,

And now a second robe of snow

Has fallen upon their shoulders low,

To mark the season's ebb and flow,—

Their gala time of year.

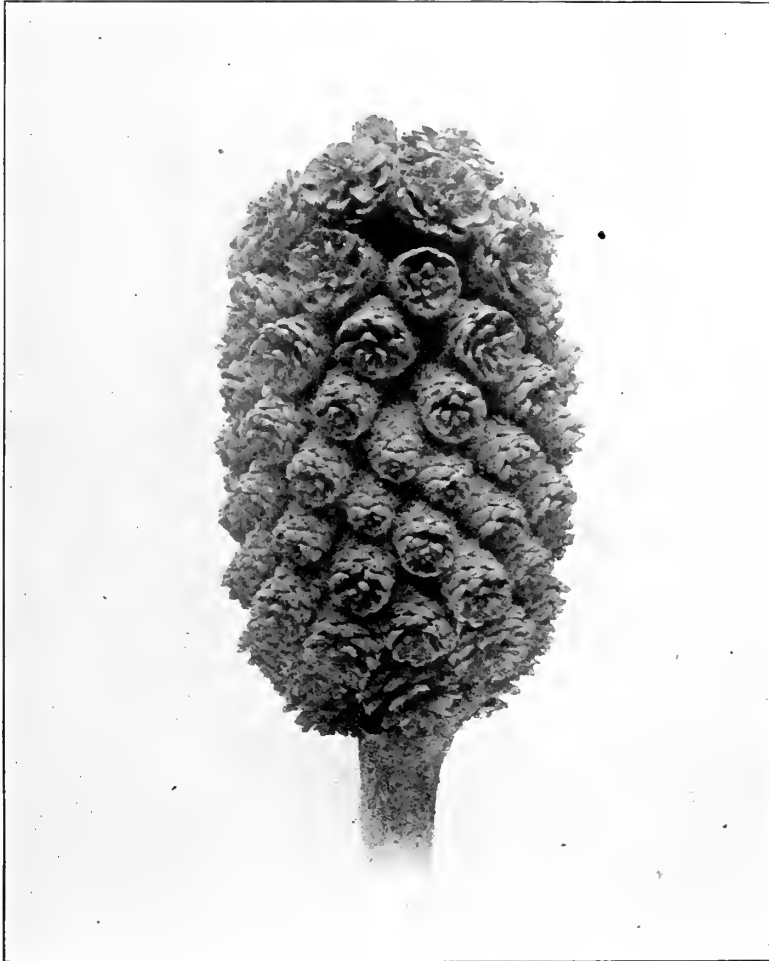
—Emma Peirce.

A Few Cones.

BY WILLIAM H. HUSE, MANCHESTER, N. H.

The *Pinus rigida*, commonly known as pitch pine, torch pine, sap pine and candlewood pine in various localities, is found from southern Ontario to Georgia and from the Atlantic shore to the western slopes of the Appalachian mountain ranges. It is the pine of the "pine barrens" of New Jersey and Long Island and is nowhere classed as a val-

other species. I have seen pitch pines hardly three feet high with one or more cones hanging from the top or branches and an old tree is often well covered with ripe and ripening cones. These cones are often in bunches of two or three or more, but all records were smashed by the tree that bore the bunch of cones represented in the accompanying picture. This curiosity was found many years ago at the top of a pitch pine tree in Manchester, New



AN ASTONISHING BUNCH OF CONES.

uable tree because of its light, coarse-grained, brittle wood. It is remarkable because of its ability to send up sprouts from its stumps and is said to be the only pine that can send up shoots after injury by fire.

The pitch pine is also somewhat noted for its fruit bearing, producing more cones and seeds than most of the

Hampshire, taking the place of the terminal bud. Why there should be such an extraordinary production of fruit is a question that naturally comes to one's mind. The end and aim of every plant is to perpetuate the species. If any accident occurs that might tend to interfere with this purpose there is often an extra effort made to overcome the

difficulty. It is possible that some accident killed the terminal bud and the vital forces of the tree sent an extra supply of sap to the spot to remedy the trouble. If that were the case the unusual stimulation produced fruit buds instead of leaf or branch buds and the result was the bunch of cones, nearly a hundred in all, that was found and carried home.

A Good Fossil Bed.

BY THEODORE H. COOPER, BATAVIA, N. Y.

In a recent number of "Science" it was pointed out that the number of investigators in pure science must increase if applied science is to progress as rapidly in the future as it has in the past.

Those who pursue science for its own sake and who make it their business to learn new facts, whether they are of any material value to any one or not, supply the material upon which the industrial sciences depend.

The geologist looking for fossils is the disciple of pure science. The geologist who searches for oil or iron is the follower of applied science, but the mineralogist is benefited by knowing something of the philosophy of the paleontologist. We who pursue geology as an avocation are usually of the pure science type. We look for fossils, collect them and leave economic geology to the utilitarian.

Mr. K. B. Mathes and I recently visited a remarkably good exposure of early strata and added several fine specimens to our collections. It was a surprise to me to find such an abundance of good specimens. Most of those I had found previously were fragmentary but there was no need to pick up fragments this time. We saw one large piece of coral over a foot in diameter. The shale in which they are embedded is soft and there was one place on the bank of a small stream, and at the foot of a high and partly disintegrated shale bank, where one could go along with a chisel and pry up brachiopods, crinoid stems, spirifers and perfect specimens of coral. We found a few nodules of iron pyrites, Trilobites, the most interesting of the lower forms of fossil life, are not so plentiful but we found three fairly good specimens.

A good specimen of trilobite is not found every day and any one having a

good collection of these is to be congratulated. Mr. Mathes through a long period of local collecting has obtained such a collection and it was my good fortune to be able to look them over. I particularly noticed one specimen very complete and about eight inches long.

If those who live in localities unfavorable for collecting fossil coral will write I will send samples of such kinds as I have found.

Wasp's Boating and Flying.

There is a black wasp, *Priocnemis flavicornis*, occasionally seen on Fall Creek at the Cornell Biological Field Station, that combines flying with water transportation. Beavers swim with boughs for their dam, and water striders run across the surface carrying their booty, but here is a wasp that flies above the surface towing a load too heavy to be carried. The freight is the body of a huge black spider several times as large as the body of the wasp. It is captured by the wasp in a waterside hunting expedition, paralyzed by a sting adroitly placed, and is to be used for provisioning her nest.

It could scarcely be dragged across the ground, clothed as that is with the dense vegetation of the waterside; but the placid stream is an open highway. Out on to the surface the wasp drags the huge limp black carcass of the spider and, mounting into the air with her engines going and her wings steadily buzzing, she sails cross the water, trailing the spider and leaving a wake that is a miniature of that of a passing steamer. She sails a direct and unerring course to the vicinity of her burrow in the bank and brings her cargo ashore at some nearby landing. She hauls it up on the bank and then runs to her hole to see that all is ready. Then she drags the spider up the bank and into her burrow, having saved much time and energy by making use of the open waterway.—Professor J. G. Needham, Ithaca, New York, in his "Life of Inland Waters."

The emerald hill this morning
Is 'broidered all in white,
Where dainty ladies' tresses
Have blossomed overnight.

—Emma Peirce.

The Floral Emblem of The Agassiz Association.

We gratefully acknowledge the kindness of "Photo-Era" of Boston, Massachusetts, in lending us the cut of the

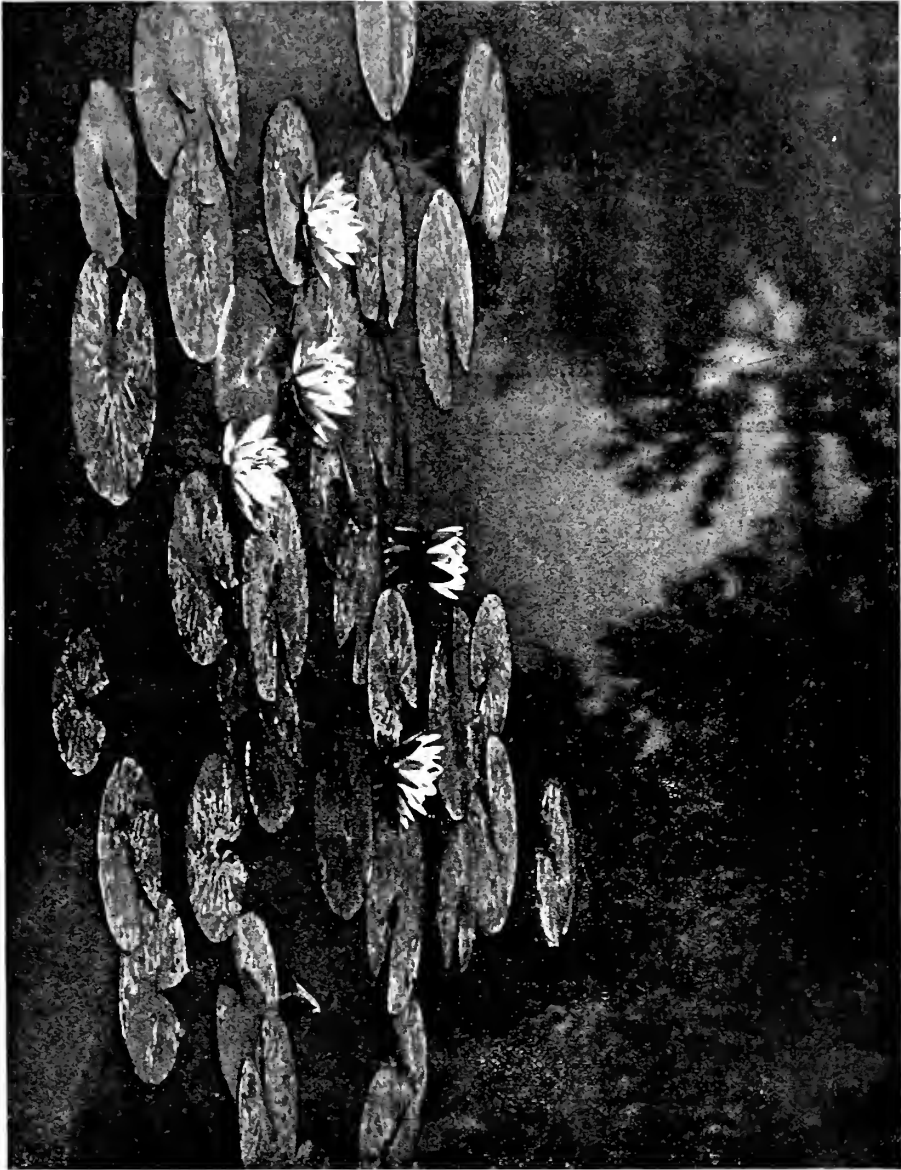
Dr. Shufeldt Nature Teacher.

We are pleased to note that Dr. R. W. Shufeldt, well and favorably known to our readers from his many interesting contributions to this magazine, has

Photograph by Peter Hovel.

WATER LILIES.

Cut by courtesy of "Photo-Era," Boston, Massachusetts.



wonderfully beautiful, expressive and dreamy photograph of white water lilies. This is indeed one of the finest portrayals of this beautiful flower that we have ever seen. The hazy background and the sharp foreground form a combination that gives all the photographic effect that can be desired.

Have any of our camerists tried to photograph this wonderfully beautiful plant?

been assigned as nature study teacher in the Summer School of the George Washington University, Washington, D. C.

Dr. Shufeldt is undoubtedly stirring up much interest among the students.

Oxford University is organizing an expedition to Spitzbergen to cost about fifteen thousand dollars.

Useful Flies.

Downingtown, Pennsylvania.

To the Editor:

Last winter, whenever the sun shone warm, our attic windows fairly swarmed with large flies, long bodied, black, sluggish, humpbacked fellows with yellowish legs and wings. I managed to kill most of them from time to time, so that very few lived to continue the tribe at our place. Since then I have learned from a book, "Insects and Man," that they are good flies to have around one's house, for their food consists of the larvae of the clothes moth and of fleas. I presume that their presence in such numbers was owing to there being so much clothing, so many carpets, etc., stowed away in the attic, but so far as we know there are no moths or fleas in the attic. I think the big flies kept us free from those destructive insects. It used to be thought, as I have read, that the larvae of these flies fed on old carpets and clothing, and hence it was called the carpet fly.

Do not we often destroy life through ignorance? It seems so. Better the idea of the Hindu, who holds all life to be sacred.

A. ASHMUN KELLY.

Of this fly (*Scenopinus fenestralis*) Dr. Howard in "The Insect Book" states as follows:

"Its specific name, fenestralis, is due to its window-loving habit. The larvae of these flies are long and very slender, white in color and with apparently many joints to the body. They are frequently found under carpets and in decaying wood; also in woolen blankets, and Riley has stated that he found one in human excretion. This, however, was probably accidental. The manager of a storage warehouse noticed many of these slender, white larvae under carpets sent in by his customers for storage. He was worried at their number, since he supposed that their presence might indicate the advent of some new kind of carpet moth. He was assured, however, that they were considered as predatory in habit, and that they feed upon clothes moths and other insects found in such places, such as book-lice. Nowhere, however, does there appear to be any record of any definite observations on this point. One observer tells me that he tried to

decide this question, but that the insect intended for prey turned out to be more aggressive and ate up the *Scenopinus* larva. They are apparently always especially abundant, as I am informed by Mr. Chittenden, in the sweepings in feed stores, and the flies are always to be found around the windows in such establishments. The probability is very strong that they feed upon such small, soft-bodied insects as flour-mites and book-lice. Mr. Pergande tells me that he has seen them eat the pupae of one of the little stored-grain beetles and also disabled house-flies which he had offered them, as well as their comrades of their own species."

Twin Water Elms.

Albion, Indiana.

To the Editor.

I am sending you a photograph of two large water elm trees which are completely grown together several feet



above the ground. I made a thirteen mile trip in an automobile to photograph this tree.

ROLLIN BLACKMAN.

The new Czecho-Slovak Republic has already established its own Weather Bureau at Prague.

TO KNOW THE STARRY HEAVENS

The Heavens in August.

By Professor Samuel G. Barton of the University of Pennsylvania.

THE constellations visible this month are shown on Figure 1. The names applied to these groups of stars have come down to us from days so remote that no records exist of times when they were not applied. A few names were applied in historic times but they are not those of important

the constellations are named. In but a few cases is there any apparent resemblance between the arrangement of the stars and the figure. In Figure 2 are shown the stars in Ursa Major and the figure of the bear as imagined, so far as we can tell, by those who called this group a bear. It will be seen that



Figure 1. The constellations at 9 P. M. (Standard Time), August 1. Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.

northern constellations. A familiar passage often cited to show the age of the constellations is found in Job 9:9 in which reference is made to the Bear (Ursa Major), Orion and the Pleiades. The maps from ancient times show us the outlines of the figures from which

the brighter stars do not lie at any important points in the figure. The three stars in the handle of the dipper seem to designate the tail of the bear, but no living bear has a tail such as is found in this drawing. The man who drew the bear was an ancient nature faker.

Any other drawing than a bear including the stars would fit the arrangement of the stars as well. Yet these names have been applied to these groups of stars from the ancient times to the present. In earlier times stars were often spoken of as stars in certain parts

gard them, except for briefly naming remarkable stars as Alpha Leonis, Beta Scorpii, etc., by letters of the Greek alphabet attached to them.

"The constellations seem to have been almost purposely named and delineated to cause as much confusion and

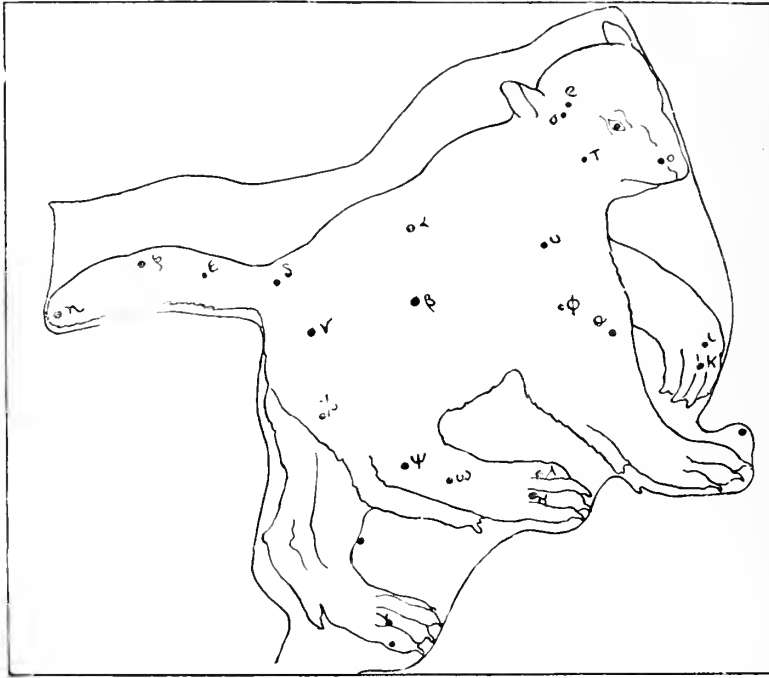


Figure 2. Ursa Major (the greater bear) as the ancients drew her.

of the figure, thus Aldebaran was the eye of Taurus (the bull) and Betelgeux was in the shoulder of Orion. This method of designating the position of stars has long since passed from common use.

Sir John Herschel has aptly described constellations as "uncouth figures and outlines of men and monsters which serve in a rude and barbarous way to enable us to talk of groups of stars, or districts in the heavens, by names which, though absurd and puerile in their origin, have obtained a currency from which it would be difficult to dislodge them. In so far as they have really (and some have) any slight resemblance to the figures called up in the imagination by a view of the more splendid 'constellations' they have a certain convenience; but as they are otherwise entirely arbitrary, and correspond to no natural subdivisions or groupings of the stars, astronomers treat them lightly or altogether disre-

inconvenience as possible. Innumerable snakes twine through long and contorted areas of the heavens, where no memory can follow them; bears, lions and fishes, large and small, northern and southern, confuse all nomenclature, etc. A better system of constellations might have been a material help as an artificial memory."

Popular opinion has long since demanded groupings and names which are of real assistance in locating and identifying the stars. In a few cases the old arrangements are sufficiently appropriate. In our map this might be said of Draco (the dragon), Corona (the crown), Sagitta (the arrow) and Scorpio (the scorpion), assuming that the long tail is in view, and Serpens (the serpent). On the other hand popular usage replaces Ursa Major and Ursa Minor, the greater and lesser bears, by the names, the big and little dippers, because the stars are arranged in the form of dippers and not in the form of bears.

So many prefer to call Cygnus (the swan) the northern cross since the stars are arranged in that form. Many are familiar with the great square in Pegasus, the W in Cassiopeia, the A of Perseus and the Y of Aquarius, etc. Many constellations, however, have little resemblance to any familiar objects.

A few suggestions along this line may be of help. The head of Draco is well defined. If, however, we combined one of the stars of Hercules with three in the head of Draco we have a fine diamond-shaped figure as shown in Figure 1. Four of the stars of Ophiuchus and Serpens also form a diamond including in its area two bright stars near each other. These two stars attract the attention and serve as a good starting point for tracing out for the two constellations, Ophiuchus and Serpens. Lyra is easily located by reason of its chief star, Vega, the bright-

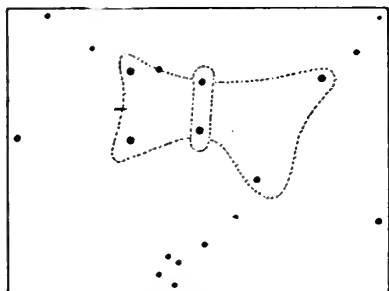


Figure 3. Resemblance of Hercules to a butterfly.

est star north of the equator. Two faint stars form with Vega a triangle with equal sides, and the southernmost of these two stars with three others form a good parallelogram. Some like to locate Sagittarius by the group of stars resembling a little dipper shown on the eastern side of the constellation in Figure 1. Aquila is easily identified from the presence of the brilliant star, Altair, with a fainter companion on either side, the three stars lying nearly in a straight line. The Wye or Y of Aquarius is formed of the four stars near Figure 1. Bootes may be found by considering it as an extension by fainter stars of the handle of the big dipper. This continuation leads to the very bright reddish star, Arcturus, at B, and, if extended further still, leads to Spica in Virgo at C. Cephus lies between Ursa Minor

and Cassiopeia. It may be seen to consist of a parallelogram surmounted by a triangle. Hercules is often said to be difficult to locate. It lies between Corona and Lyra. Some of the brighter stars in it are arranged somewhat in the form of a capital H. The stars may also be looked upon as representing a butterfly flying toward Corona. This idea is illustrated in Figure 3.

* * * * *

The Planets.

None of the planets are shown on the map. Jupiter and Saturn are visible low in the west earlier in the evening. Uranus, invisible to the naked eye, is in Aquarius. It is an evening star after August 31. On August 3 the earth passes through the plane of Saturn's rings for the third and last time during the passage of the plane of the rings through the earth's orbit. The earth passed through the plane of the rings November 5, 1920, and February 22, 1921. From August 3 the rings will begin to open. They will open wider and wider for seven years and then begin closing. It will be fifteen years, or half of the period of Saturn's revolution about the sun, before they will be seen on edge again. When it is seen again in the early evening next spring the rings will be opened enough to show their real character.

Where Age Improves Germination.

The seed of some garden vegetables is never saved by amateurs for the reason that the plant is a biennial, and doesn't make seed until the second year. Cucumber seed is seldom saved, probably for another important reason, and that is the germination factor. Cucumber seed only a year old is characteristically poor seed. Germination improves with age. Seed houses never plan to sell cucumber seed which is not at least two years old. Seedsmen, as the professional gardener is perfectly well aware, know that cucumber seed is at its best at three years; that it is excellent at five years. Not only does aged cucumber seed have higher germination, but it produces much stronger plants. Plant cucumber seed fifteen or even twenty years old, and a great deal of it often will come up.—Scientific American.

EDITORIAL

A Really Interested Friend.

We like the letters from Mr. Theodore H. Cooper of Batavia, New York. We have been able to publish some things he has written and would gladly publish more if we could find room in the present crowded condition of *THE GUIDE TO NATURE*.

Mr. Cooper writes delightfully of his observations of a spider viewed under a magnifying glass, telling how it moved first one leg and then another in ascending a "high cliff" on the surface of a boulder, seemingly to look around like a man who has climbed a hill to get his bearings.

He concludes an extended letter of interesting observations afield by telling of a faithful friend who is always interested in what he is doing:

"Very often of late when returning home from the woods I pass a friend, whose picture I enclose, who always seems glad to see me, and who as yet has not asked me what profit I find in tramping around the fields like a hobo. She seems not so much interested in what I have found or what I have to say as in myself."

(The picture enclosed was that of a cow!)

The Ignorance of the Uninterested.

A "queer-bird" they called him.

The neighbors thought he was a vagrant.

When a policeman interrogated him, he began to tell him about some cuckoos or something that the disinterested "arm of the law" was totally ignorant of and, for that reason, asked: "Do you live around here?" thought the "poor nut" was demented.

With a snort of derision, the officer

"Oh, no," answered the old gentleman, "I'm living in New York, but I come here every spring to be with the birds. I'm very fond of birds."

"Well," said the officer bluntly, "some of the folks around here are complaining. They think you're a queer bird yourself."

"Do they?" exclaimed the amazed old

gentleman. "How very extraordinary—here's my card—it may explain matters."

The card read: "Professor Malcolm Ogilvie, New York Ornithological Society, 53 Jane Street, New York."

'Twas ever thus!

Years ago Bradford Torrey describes a like experience and it has happened to those interested in nature since the beginning:

"While I stood peering into the thicket, a man whom I knew came along the road and caught me thus disreputably employed.

"Without doubt he thought me a lazy good-for-nothing; or possibly (being more charitable), he said to himself, 'Poor fellow! he's losing his mind.'

"Take a gun on your shoulder, and go wandering about the woods all day long, and you will be looked upon with respect, no matter though you kill nothing bigger than a chipmunk; or stand by the hour at the end of a fishing pole, catching nothing but mosquito-bites, and your neighbors will think no ill of you.

"But to be seen staring at a bird for five minutes together, or picking roadside weeds!—well, it is fortunate that there are asylums for 'the crazy.'

"Not unlikely the malady will grow on him; and who knows how soon he may become dangerous?

"Something must be wrong about that to which we are accustomed.

"Blowing out the brains of rabbits and squirrels is an innocent and delightful pastime, as everybody knows; and the delectable excitement of pulling half-grown fishes out of the pond to perish miserably on the bank, that, too, is a recreation easily enough appreciated.

"But what shall be said of enjoying birds without killing them, or of taking pleasure in plants, which so far as we know, cannot suffer even if we do kill them?"

Another instance of the same lack of

understanding through the ignorance of disinterestedness, is told in the memoirs of Thomas Bellerby Wilson, a man of great wealth and a lover of all things in nature; a patron of the Academy of Natural Sciences and donator of hundreds of thousands of dollars to the cause:

"During his residence in New London (Chester County, Penn., 1833-1841) tradition reports the surprise of the people in that vicinity when they saw him in his long walks along the brooks and through the fields, groves and woods, with his botany box on his back, his entomological net in his hands, the handle of his geological hammer extending from his coat-pocket and his hat covered all around with beetles, butterflies and other insects which he had pinned thereon."

So the words of that wise philosopher of years gone by, Samuel Johnson, come back with added meaning: "Nothing has retarded the advancement of learning more than the disposition of vulgar minds to ridicule and vilify that which they cannot understand."—I. Foster Moore in editorial in the Bridgeport (Conn.) Post.

This reminds me of the arrest of a doctor in Hartford, Connecticut, a few years ago on the supposition that he was crazy because he was out with a net at night searching around the electric lights for moths. It is said that it cost the policeman who arrested him a box of cigars when the doctor, who fully appreciated the joke, arrived at the station house. He was one of the most prominent physicians of Hartford but the policeman had not before made his acquaintance.

A Nest of Floating Bubbles.

"Aquatic Life" publishes an interesting article on the peculiar nest of the fighting fish. The little ones are hatched within a nest of floating bubbles, and should one tumble out and settle to the bottom of the water, the male fish sucks the recreant youngster into his mouth, goes near the surface of the water and literally gives the little fellow a "blowing up" into his bed again. We quote from the article as follows:

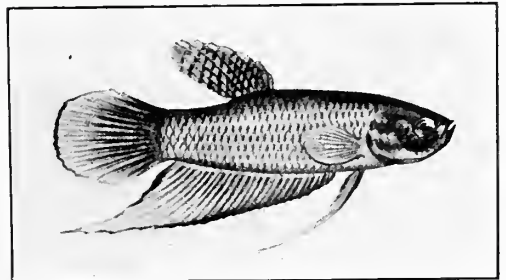
"The male blew a number of bubbles on the top of the water. Rising to the surface, a mouthful of air was taken

and retained for two or three seconds, during which time it received a coating of mucus. The bubble thus formed was blown at the surface, and the operation repeated until a circular mass



THE FLOATING BUBBLE NEST.

was produced, three inches in diameter. Another layer of bubbles was next blown, which had the effect of raising the first out of the water. Seven or eight layers were formed in all, but as the later bubbles were blown only under the central portion, a dome-shaped structure resulted. So viscid is the secretion enclosing the bubble that, though exposed to the air for ten or twelve days, it still fulfilled its function.



THE FISH THAT MAKES BUBBLES.

"On the third day the nest was completed and breeding commenced. * * * After the eggs are extruded the male takes up a position below his mate and secures them, to the number of six or so, in his mouth. He there gives them a coating of mucus and places them beneath the bubbles, to which they adhere. The scene is re-enacted until from one hundred and fifty to two hun-

dred eggs are produced. The female is not allowed in the vicinity of the floating nest when laying is completed, and the male is untiring in the care of the eggs, constantly moving their position and recoating them with mucus.

"On the third day the eggs hatched; the young fishes remained beneath the bubbles for some time, but occasionally showed a tendency to sink. They were immediately taken in charge by the watchful father and replaced. In a day or two numbers disposed to leave the shelter of the nest increased to such an extent that the male could not possibly secure them all, though he frequently had seven or eight in his mouth at once. He would search for them most diligently at the bottom of the aquarium, and securing some carry them back to the cradle. Many were, however, eaten by the female."

Dr. Edward F. Bigelow and daughter, Miss Pearl Agnes Bigelow, spent the month of July in Kineowatha Camp for girls at Wilton, Maine. They took with them eleven girls—Mary Kane, Sound Beach, Zora Cheever, Greenwich, and nine from New York and New Jersey. Several of the girls are from Miss Spence's School, New York City, where Dr. Bigelow has been a teacher for many years. Dr. Bigelow also took three boys to Camp Kineo, Harrison, Maine. He will go to Camp Mystic, Mystic, Connecticut, for the greater part of August, taking with him from New York City one girl who has been with him in camps in Maine and New Hampshire.

Capturing a Sturgeon.

BY F. H. SIDNEY, WAKEFIELD, MASS.

During the June drought that caused low water in the streams of this section a huge sturgeon became grounded in one of the pools of the Merrimac River at Lawrence, Massachusetts. Thousands of people gathered on the foot-bridge and watched the monster fish trying to free itself until finally the police had to clear the bridge of people for fear of a collapse of the structure.

One man began shooting at the sturgeon with a rifle but the fish and game warden put a stop to this as prohibited by a state law. Several unsuccessful attempts were made to capture the fish. Three barrels of unslacked lime were

poured into the pool but even that had no subduing effect on the fish. Finally several men with spears and gaffs effected the capture.

The sturgeon was nine feet long and weighed three hundred pounds. The captors placed it on exhibition, charging twenty-eight cents a head to view the monster, and realized several hundred dollars from the venture.

Robins Liked The House.

Carpenters building a house in Rome, N. Y., found that a robin had flown through an open window and built a nest over the inside of a window casing. The nest was destroyed, but the next day a start was made on a new one.

Eight times this was done, the bird immediately starting a new nest as soon as the other was destroyed. The owner of the house, hearing of the bird's heroic efforts to build a home, and being in a position to know that only through heroic effort is a home possible these days, ordered that the room containing the nest be left undisturbed until after the nesting season.—N. Y. World.

English Sparrows and Corn Pollen.

BY MISS HARRIET E. WILSON, PORT MATILDA, PENNSYLVANIA.

The English sparrow has serious faults, among them those of roosting around the house and on porches, and of eating pea blossoms, besides keeping other birds away.

But they have at least one redeemable habit, that of fertilizing the corn. Two summers ago I observed a flock on the blossoms of my sweet corn actively dusting themselves. The pollen floated about like dust and, lighting on the silk, produced an excellent yield of good corn. Last summer I noticed a similar occurrence, only the flock was smaller.

Some years ago the bumblebees had to be ruthlessly destroyed and the clover seed proved a failure in many localities. The bumblebees fertilized the clover by carrying pollen from one blossom to another.

Various persons have been reporting in "Science" observations of rainbows by moonlight. These seem to be very uncommon, and are usually described as almost white.



Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

The "Fun" of Playing Chemist.

BY THEODORE H. COOPER, BATAVIA, N. Y.

To be made sweet and pure again by the chemistry of the soil.—Burroughs.

When I was about twelve years old I used to look into the laboratory at school and gaze with awe at the strange looking apparatus and instruments in there, and wonder what could be done with them. I used to want to pour out some of the magic liquids in those bottles and see the genii rise from them. A great many men go through life with the same ignorance and are awed by anything more delicate than an alarm clock or a monkey wrench. To me it seemed that a man who knew how to use such delicate and complicated paraphernalia must be a wizard and able to do wonderful things. I wished to be able to do this too, for we are prone to imitate those whom we admire or respect.

I noticed one round bottle with a long neck which was bent over sideways (a retort, of course) and asked several men what it was.

One old farmer said, "Mebbe that's for their alchemy."

"What's that?"

"The black art. A secret way of making medicine and very strange, very strange," said he, shaking his head mysteriously.

I saw that I could learn nothing from my acquaintances so I went to the library and asked for a book on alchemy. The librarian gave me "First Steps in Scientific Knowledge," and on my way home I learned the first of those "secrets" and began to see what it was all about. Numerous experiments in physics and chemistry were outlined in the book and I performed such of these as I could. One day I was boiling down some salt and water to see if the salt could really be redeemed. I had supposed, and I venture to say that there are a great many men right now that think the same thing, that salt

when it dissolved became part of the water and would go up in steam. My relatives did not take kindly to this way of spending my spare time, but wanted me to help with the farm work, and in this instance one of them asked, "What are you doing there?"

"A chemical experiment. This is a solution of chloride of sodium."

"Where did you get it? Don't monkey with that stuff around here. You'll blow the place up."

I borrowed more books from the library and tried a great many simple experiments, but as my acquaintances were against it and I could get no money for chemicals or apparatus, I dropped my studies in this line and took up astronomy. But I left it only temporarily for my interest in the subject was fanned every time I got a peek into the laboratory or saw a picture or heard a reference made to chemistry. After a lapse of five or six years I began earning money for myself and I lost no time in buying books, chemicals, apparatus.

There is a peculiar charm which appeals to me in making some iodine crystals to look at with my microscope, or growing a herd of animalcules in a test tube, or in the electrolysis of water. Though most of my acquaintances wonder what interest there can be in a "lot of bottles of dope" as they call it, I still continue to spend my spare time doing such things and shall continue until I find a more profitable pursuit which is just as much "fun."

The game and fur bearing animals of New York State, if capitalized, are worth not less than \$53,000,000; they return an annual dividend of more than \$3,200,000; and they cost the State for their protection and increase the nominal sum of \$182,000. This cost of protection and increase is thus less than six per cent of the annual dividend.—"The Conservationist."

"Our Lord's Candle."

BY MRS. FANNIE E. BLAKELY, LOS ANGELES, CALIFORNIA.

I spent the summer solstice among the hills, climbing the long ascent from Los Angeles in the Richardson Company's auto stage and alighting at Tujunga in the noon brightness of mid-summer day.

In California's floral calendar this is the festal time of "Our Lord's Candle," the Spanish California name for the



"A FOUNTAIN OF LIVING ENERGY."

yucca, the Spanish needle or Spanish bayonet of Mexico. On the wide expanses of the mesa, the steep sides of the foothills, the barren wastes of the arroyo, its immense sprays of flowers rise like majestic candles to a height of fifteen, sometimes twenty, feet. Each plant stands isolated from its fellows with a space of a hundred or more feet between it and its nearest neighbor. This withdrawn and solitary habit adds to its dignity and impressiveness, and makes it visible at a great distance. Seen on the farthest hillsides, too remote for the eye to distinguish them as flowers, they seem to spring out of the dark myrtle green of the chaparral like jets of luminous foam.

Standing near one of these floral

giants that seems to lift itself like a great altar light into the cloudless blue of the sky, I find myself awed and silent as in the presence of a foaming cascade. A cascade it is in truth, reversed and upspringing, a fountain of living energy.

In no situation does the plant impress me more than when growing on the desert levels where the mountain gorges pour down their storm floods. Here where the water torn expanse ridged with drifts of boulders, gravel and sand, gleams under the fierce subtropical sun like the blanched ribs of the world, this marvelous flower lifts its cream white spray straight as a mast and motionless as if carved in alabaster, springing up like a white flame into the white radiance of "the beautiful, awful summer day."

Transfiguration.

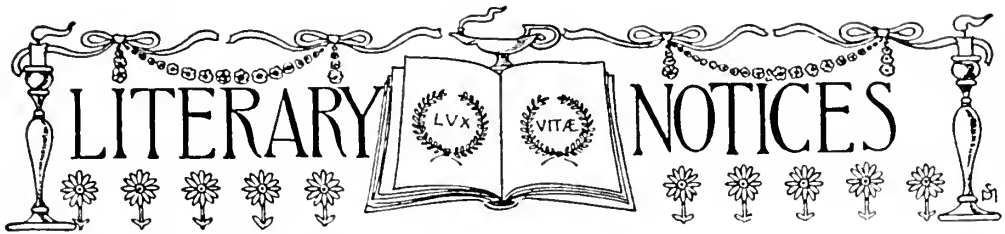
A few nights later, beside a small fire we had built in the cool of evening, I tried to tell old Donald something about the Transfiguration, how Christ had gone up on the mount with Peter and John and James, and what had happened there.

"It wasn't that Christ himself was actually changed as he prayed on the mountain top," I said to Donald. "The change was in Peter and John and James, who in these moments saw Christ with a new vision and a new understanding. The Transfiguration was simply a mental process of their own; they saw clearly now where before they had been half blind. And I am wondering if this old world of ours wouldn't change for us in the same way if we saw it with understanding, and looked at it with clean eyes?"—James Oliver Curwood in "God's Country."

Spiral Lightning.

BY CHARLES D. ROMIG, AUDENRIED, PENN.

Some years ago a tall hemlock tree in this place was struck by lightning. On examination I found a neat spiral channel cut through the bark from top to bottom of the tree trunk. The spiral or groove was about two inches wide and as deep as the bark was thick. The interesting part is that this tree was not otherwise damaged. Usually the result of a lightning stroke is a broken trunk, but here is only the even and uniform spiral cut in the bark.



LITERARY NOTICES

THE AGE OF INNOCENCE. By Edith Wharton. New York City: D. Appleton and Company.

We call attention to this book on account of its quaintness and delightful style. It is mainly a love story but incidentally portrays customs in the old times.

BIRD STORIES. By Edith M. Patch. With Illustrations by Robert J. Sim. Boston, Massachusetts: The Atlantic Monthly Press.

This little volume is the second in a series of nature study books by the entomologist of the University of Maine, whose "Hexapod Stories" have endeared her to many little boys and girls. It is intended for slightly older children than those for whom the "Hexapod Stories" are written, and contains a wealth of information in the same well-chosen language so well suited for children.

TREES OF INDIANA. By Charles C. Deam. Indianapolis, Indiana: Division of Forestry, Department of Conservation.

It is pleasing to note the interest in trees manifested in Indiana. We hope that that interest will extend to other states. The first edition of this book, ten thousand copies, was exhausted in about three years, the second edition in 1919. That there is still a demand for the work is proved by the appearance of this issue, which has been carefully revised. The result is a beautifully illustrated, handsome and commendable volume.

THE MELODY OF EARTH. An Anthology of Garden and Nature Poems from Present Day Poets. Selected and Arranged by Mrs. Waldo Richards. Boston, Massachusetts: Houghton Mifflin Company.

This is a collection of comparatively recent poems on nature. It is divided into chapters with special reference to gardens. It also tells us of wings and song, pastures and hillsides, lovers and roses and underneath the bough. The selections are well made and bring to the readers many beautiful productions not readily obtainable elsewhere. In the classified form the continuity of the subject affords special delight.

TERRITORY IN BIRD LIFE. By H. Eliot Howard. With Illustrations by G. E. Lodge and H. Gronvold. New York City: E. P. Dutton and Company.

An investigation of the importance of breeding territory in bird life. The battles,

so marked a feature of bird life in the spring, are shown to be directly related to the possession of territory, and the origin of migration is traced to the seasonal competition for territory.

The author's conclusions have an important bearing on various biological problems, and are supported with a wealth of personal observations showing much skill and knowledge.

NANTUCKET WILD FLOWERS. By Alice O. Albertson. New York and London: G. P. Putnam's Sons.

This book is for the many friends of flowers who live in Nantucket, for others who have felt the lure of this happy hunting ground; for all who find pleasure in the distinct and varied flora of that unique island.

SECRETS OF EARTH AND SEA. By Sir Ray Lankester. New York City: The Macmillan Company.

This volume is a successor to "Science from an Easy Chair" (Series I and II) and "Diversions of a Naturalist" by the same author. It is a collection with some revisions and additions of articles that have been published in periodicals. It therefore has the delightful variety of a scrapbook with a little more of continuity. The publishers tell us that the chapters form a series that will enable the reader to take a wide view beyond the ordinary history of the last three or four thousand years, going back to the emergence of man from the manlike apes, back to the time of the big animals, cave drawings and primitive ceremonies. The book answers such questions as, How did Swastika come to be, What is the biggest beast on earth, and Why is the water blue. The reading is rather scrappy, yet it is entertaining. The casual reader would doubt the assertion that the book affords a consistent synopsis, since it rambles about much like ordinary conversation, one interesting item suggesting another somewhat remote.

TREASURE MOUNTAIN. By Edna Turpin. New York City: The Century Company.

It is hard to imagine the girl who would not enjoy this exciting, rapidly moving tale of life among the mountain whites of Virginia. The fifteen year old heroine is camping with a party of friends on the shores of a mountain lake. She climbed up a dangerous cliff on the edge of a waterfall after an orange colored orchid and almost lost her life in doing so, but I've to regret her

toolhardy and thoughtless destruction of this beautiful and rare plant.

Through the influence of the leaders of the camp a band of young people called "Flower Friends" was organized, and they devoted themselves to transplanting and replanting some of the rarer native plants of the region to suitable localities. It is not stated whether they succeeded with all of them, but the cardinal flower, Indian pipe, grass-of-Parnassus, ferns, etc., were some of the plants with which they experimented. It is doubtful if the Indian pipe, which is a true parasite, could be successfully transplanted. In fact, much of the difficulty with orchids, arbutus, laurel, rhododendron, hemlocks, etc., is due to the fact that there are symbiotic fungi on their roots and they require sour soil and no manure or cultivation.

The Garden clubs of America are advocating the making of wild flower gardens, but it is a question whether the protection of the natural habitats would not be best—Elizabeth G. Britton, Secretary-Treasurer Wild Flower Preservation Society of America.

GOD'S COUNTRY. *The Trail to Happiness.* By James Oliver Curwood. New York City: Cosmopolitan Book Corporation.

I suggested to the publishers that they send us an editorial copy of this book on account of my belief that it will interest our readers. I was impelled to do this by reason of an enthusiastic telephone message from one of our friends who has discovered that he is living in God's Country, and that he is faithfully following the trail to happiness. The author maintains that he has found the heart of nature. He has. It has opened itself to him. He has learned much of its language. But he came to this understanding through appalling adventures and much bloodshed as a hunter of big animals in the wild. He has learned to appreciate the importance of life in every form and is now trying to give, as he states, a clearer vision of what has happened in recent years: "The mad cuesting of a thousand million people for a spiritual thing which they cannot find."

Amidst a multiplicity of religions he says that he has found one that fills the soul with faith and confidence. There are many assertions in the book which some of us cannot accept but it is consistent in his claim: "Nature is God. It is God that lives in the rose, in the violet, in the tree, just as he lives in the heart of man. It is God that breathes in the grass which makes the earth sweet to tread upon, and it is God that lives in the song of birds. His 'Ife' is all-encompassing, the vital spark of all existent things." The author advances a long step farther than John Burroughs in his "Accepting the Universe." Instead of denying the existence of God, he accepts all nature as God. He closes his argument with these thoughtful words:

"Yes; the world is crying aloud for a great faith, even as it smashes itself into moral fragments on the rocks of its own egoism and its own selfishness. But there has come a rent in its armor, and as it commits crimes and plans for still greater crimes, it also begins to realize its colossal wickedness.

And in its terror it shrieks aloud for a manifestation of the Divine Power. It demands proof.

"And again I say that the proof is so near that the world looks over its head—and does not see it. Not until man's egoism crumbles will he understand. For ghosts will not come back from the dead to quiet his frenzies, nor will angels descend from out of the heavens. The Divine Power is too great and all-encompassing for that. God, speaking of that power as God, is not a trickster. He is not a mountebank. He is not a lawyer arguing his case. He is Life. And this Life That Never Dies has no favorites. Such is my humble faith."

As a kind of benediction he describes an old unpainted farmhouse in a little sleepy valley that he loves and wherein dwell an aged couple in poverty and in suffering, yet in that house there are happiness and true faith. He says that all nature seems to rejoice in that faith, that the birds build their nests under the porches and there is melody in the trees. He asserts that faith in the goodness of nature is an equivalent to faith in God and is what all mankind needs.

"Here are suffering—and peace; few of the riches of man, but an unlimited wealth of contentment and faith. These two, prisoned to the end of their days, have found what all the world is seeking. The little old house of the hollow, even with its tragedy, is glad. And life has made it so, the understanding of life, the voice and living presence of life as it whispers about me now in the golden sheen of Indian summer."

WAITING IN THE WILDERNESS. By ENOS A. MILLS. Garden City, New York: Doubleday, Page & Company.

Like his previous book, "Adventures of a Nature Guide," this is a tale of life among the peaks of the Rocky Mountains, its privations and dangers, its beauty, its adventure—and its peace. Again Enos A. Mills opens for us a window upon the cool vistas of nature and lets in a draught of refreshing mountain air.

It is full of Mr. Mills' delightful and characteristic humor.

If you love the outdoors, if you enjoy writing that stirs and stimulates and keeps you absorbed, even though it is not fiction, you will like this book.

To a Fern.

BY CHARLOTTE E. SMITH, GREENWICH, CONN.

O beautiful fern, all day
By the brook you wave and turn
In the wind, in the wind;
All day you turn your head
In your cool and shady bed,
Little fern, little fern.

O dear little fern, when I saw you last
You were small and half hidden
In the moss and the grass,
But now you're straight and tall,
The loveliest fern of all,
At last, at last!



PUBLISHER'S NOTICES

'Tis not in mortals to COMMAND success, but we'll do more, we'll DESERVE IT.—Addison.

The Low Price of Milk.

Considered merely as a beverage, and a mighty good beverage it is, aside from its food value, there is much to be said and has been said in favor of milk.

But from one point of view a fact that stands out conspicuously I have not seen mentioned. This is a wonder especially when we remember the jokes that have been tossed at the dairyman about the pump and the well in connection with milk. Isn't it astonishing that ginger ale, sarsaparilla and other so-called "soft drinks" should cost more than milk? How is it that a pint of ginger ale is sold for twenty cents and a quart of milk for fifteen? Certainly the small amount of ginger and flavoring and sugar should be cheaper than the slow and laborious process of raising the cows through two or three years of nonproduction, then giving them the assiduous attention they should have, extracting the milk by a slow process, delivering it at the uncanny hours of the early morning, working perpetually with ice under sanitary conditions, then selling it for less than half the price of soft drinks that require seemingly not one-tenth the labor and cost. It behooves every manufacturer of soft drinks to explain why plain water, a little flavoring, a little sugar with no special expense for handling should cost twice as much as the best milk.

We have recently had a milk week in which we were urged for the benefit of our health to drink more milk. One argument that might have been used, and it seems to be a good one, is that milk should be used universally until these ginger ale manufacturers reduce their prices to a reasonable figure. A duty that they owe to the public is to explain why things are thus and so. To any one who looks at the subject impartially, it would seem reasonable that

milk should cost at least six times more than a little flavored water that needs no ice nor special care to preserve it. Jokes are out of order against the dairyman for he can discard the pump and the well and beat them both hands down—milking into a pail.

I enjoy and greatly appreciate *THE GUIDE TO NATURE* and consider it one of the most important magazines published, as its message is so great and yet simple enough to be understood by every one.—Mrs. R. S. Slater, Northport, New York.

A Letter of Appreciation.

Stamford, Connecticut.

To the Editor:

I have been asked by the faculty and students of the Merrill Business College to perform the pleasant duty to address these lines to you, to thank you and the Misses Nellie and Pearl Bigelow for the great kindness shown us during our recent visit to *ARCADIA*.

There are times when the heart is not capable of furnishing the words that should be used, and I find myself in that position today, knowing that words can't express even part of our gratitude to you. We are sure that the goodness of your nature alone prompts you to act kindly, and not the hope for anything like a return; but we trust you will accept this token of appreciation from those who spent a pleasant day in the Home of Mother Nature, thanks to your kind and generous heart.

Though the time flies and the years of our life are passing along like the passing of a summer breeze, like the melting of the morning dew in the gardens of *ARCADIA*, yet the waves of time can't carry away impressions like those of the day we spent in the Home of The Agassiz Association, as they are carved deeply in our memory.

THE MERRILL BUSINESS COLLEGE,

By James Cookorelos.

In the Home of The Agass'z Association.

(Written on the day the Merrill Business College students visited ArcAdiA.)

Our life is much like a railroad,
Just a right-of-way and two streaks of
rust,
There are no return tickets issued,
And, of course, make the trip we must.
Onward we travel so swiftly,
Nor linger we by the way
To see in all God's creations
The beauties of just one day.

I'll tell you of a trip we made—
It won't take very long—
To dear old Dr. Bigelow's place,
Just five and forty strong.

We were students of Merrill College,
Invited to spend the day
At the ArcAdiA, to study Nature
And learn of the wonderful way
She has of revealing her secrets
Of Life's mysteries. The tint and the glow
Is found in the tiniest insect
That lives where the Calamus grow.

We left the "ArcAdiA Special" at the corner
And walked slowly down the street,
Passed the sign that bade us "Welcome,"
Which assured us we need not retreat.
We were greeted in "Little Japan" by the
Doctor;
And the clasp of his hand made us feel
We were boys and girls of one family;
One Father, One World, and One Ideal.

He talked to us there for a little while,
Then led us out under the trees,
And gave us a wonderful demonstration
Of what love can do with the bees.
Some had the courage to follow him
Close to the bees and their hives,
While others remained far in the back
Ready to make a dash for their lives.

The Misses Leary, Epstein and Bennett,
Messrs. Carlson, Skiba, Chick and Alfau,
Miss Hecht, Miss Spesha, were the true
students
Of Nature: understanding Love and its
law.

The bees buzzed love in their ears,
Crawled affectionately on their clothes,
They played with them fondly, but the noise
they made
Seemed to those in the background a
warning to go.

It was a wonderful lesson Dr. Bigelow
taught us—
For long in our memory, I know, it will
cling—
Of a love so real, so true, so divine,
That could rob a bee of its sting.

Then for a trip to the swamp we started,
Where the lilies love to grow,
Mr. Bullfrog blinked us a greeting,
And an invitation to go
Right into the heart of the swamp,
To the place they call "The Retreat,"

Where huckleberry bushes grow up high
And ferns and sweet grass at our feet.

We lingered a while in this Sanctum San-
ctorum,
Not a sound of the outside world was
heard,
The leaves of the trees preached a sermon—
Like Jack in the Pulpit, they said not a
word—
But we heard with the ears of a nature-lover
The rustle of the leaves on the trees,
And the fragrance of the sweet-fern con-
vinced us
That Life, not Death, is all mysteries.

The path led us back to the pavilion
Where the tables were set for our lunch.
We were all very happy, but hungry—
A hungry, frolicing, rollicking bunch—
The boys cut the wood and made the fire,
And the girls cook the "goods" on the
grill—
And but for the thunder, the storm and the
lightning,
We might have been lingering there still.
—Jean Dawless.

THE GUIDE TO NATURE is always
looked forward to and its contents so
beautifully arranged the writer could
not offer any suggestion only to say we
hope every home is subscribing.—Mrs.
Alida J. Cumming, Sound Beach,
Connecticut.

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theory that the universe is finite—or
we think we do—but what puzzles us
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We make moderate amounts of money go a long way. We point with pride to every detail of our record of almost a half century. There have been only two managers of The Agassiz Association, the former for thirty-two years, the present for fourteen, and neither has received salary for the executive management of The AA.

No other charitable and educational organization has a better Board of Trustees. They represent a wide range of territory and interests—characteristic of The AA.

The United States Post Office Department at Washington carefully investigated The Agassiz Association and because of its altruistic, educational and noncommercial purposes awarded a special low rate of postage to its official magazine.

The Treasury Department Internal Revenue also carefully investigated and exempts from income tax The Agassiz Association and all gifts to it.

We have gladly and freely helped many other organizations in their nature interests. We untiringly render free services at ARCADIA to rich and poor, young and old. To us come a wide range of visitors. Our correspondents include every phase of humanity.

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We need and merit a gift of \$5,000. Do it now. Do not wait until you are dead. We want to give the donor the joy and satisfaction of knowing just how advantageously the money will be expended.

We always have been a lively organization for the living, by the living.

Faithfully yours,

EDWARD F. BIGELOW,

President The Agassiz Association, Inc.

The Agassiz Association and Gifts to it are FREE from Income Taxes.

TREASURY DEPARTMENT

Internal Revenue Service

Hartford, Conn., April 13, 1921.

Office of the Collector, District of Connecticut,
Agassiz Association, Inc., Sound Beach, Conn.

SIRS:

With further reference to your letter of February 28th, 1921, you are advised that the Commissioner of Internal Revenue at Washington, D. C., has considered all facts as presented relative to the activities of your association and has decided that you are exempt from the filing of income tax returns under the provisions of the Revenue Act of 1918.

The Commissioner has further stated that amounts contributed to your association by individuals may be deducted in the income tax returns of said individuals to the extent provided in Section 214 (a) (11) of the Revenue Act of 1918.

Very truly yours,

JAMES J. WALSH, Collector.



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"Science" for April 22, 1921, has for its initial article a long account of Sherburne Wesley Burnham, the astronomer, who died last spring at the age of eighty-three. The interesting point in his career for readers of *THE GUIDE TO NATURE* is that he was entirely self-taught, having hardly more than a district school education. He worked most of his life as a court stenographer and clerk. He became interested in astronomy shortly after he was twenty and by the time he was thirty-two he had gone far enough with his chosen science to buy himself a six inch glass and before he was thirty-six he was publishing through the Royal Astronomical Society and corresponding with professional astronomers all over Europe. Later he was on the staffs of both the Lick and the Yerkes Observatories, where he did much of his work with the two largest glasses in the world between Saturday night and Monday morning and on his other holidays, doing a full week's work between. His special field was double stars but he was the first to see Halley's comet on its return in 1909. It all shows what a student of nature can do if only he uses his spare time.



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or sentimentality, or aestheticism, or
any other mode of thought or habit of
mind which passes for "love of nature"
but is really a form of self-indulgence.
I am only suggesting that the time has
come when societies for the Prevention
of Cruelty to Animals should make way
for societies for the Promotion of
Friendship with Animals; when the
test of a nature-lover should not be
whether he knows a golden-crowned
kinglet when he sees one, but whether
he can love a barnyard rooster as a
friend, not merely as a prospective
roast; when the test of a dog-lover
should be, not whether he can love a
pampered, pedigreed winner of blue
ribbons, but whether he can love what
Sydney Smith called an extraordinarily
ordinary dog; and the test of a citizen
of the world should be whether he
feels, not only his brotherhood with
men, but his brotherhood with every
lowliest creeping thing that lives and
eats and dies on the earth.—By Robert
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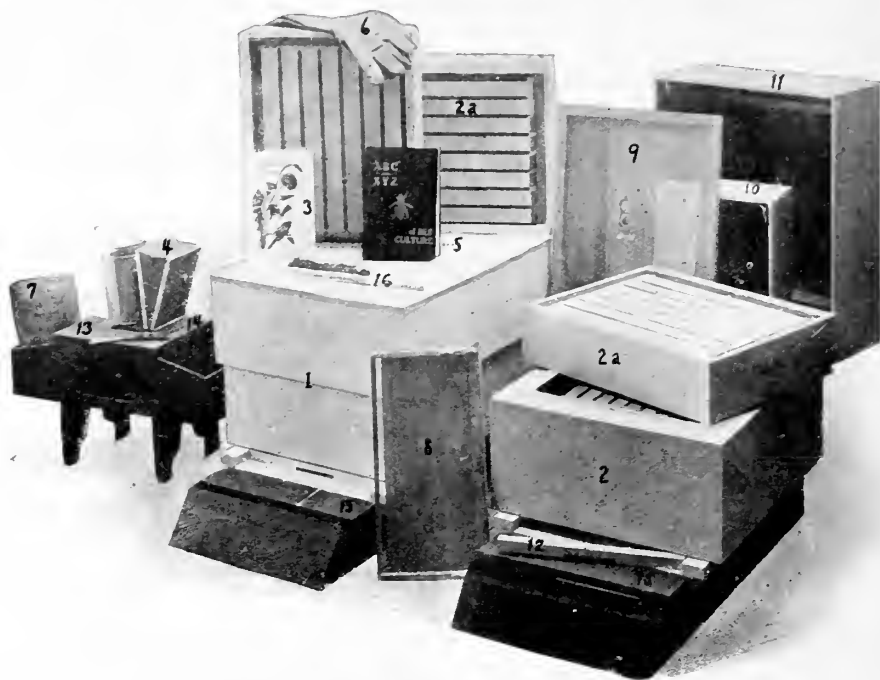
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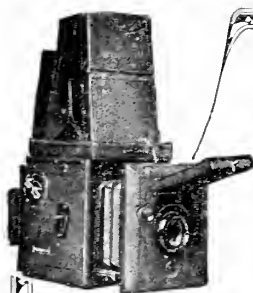
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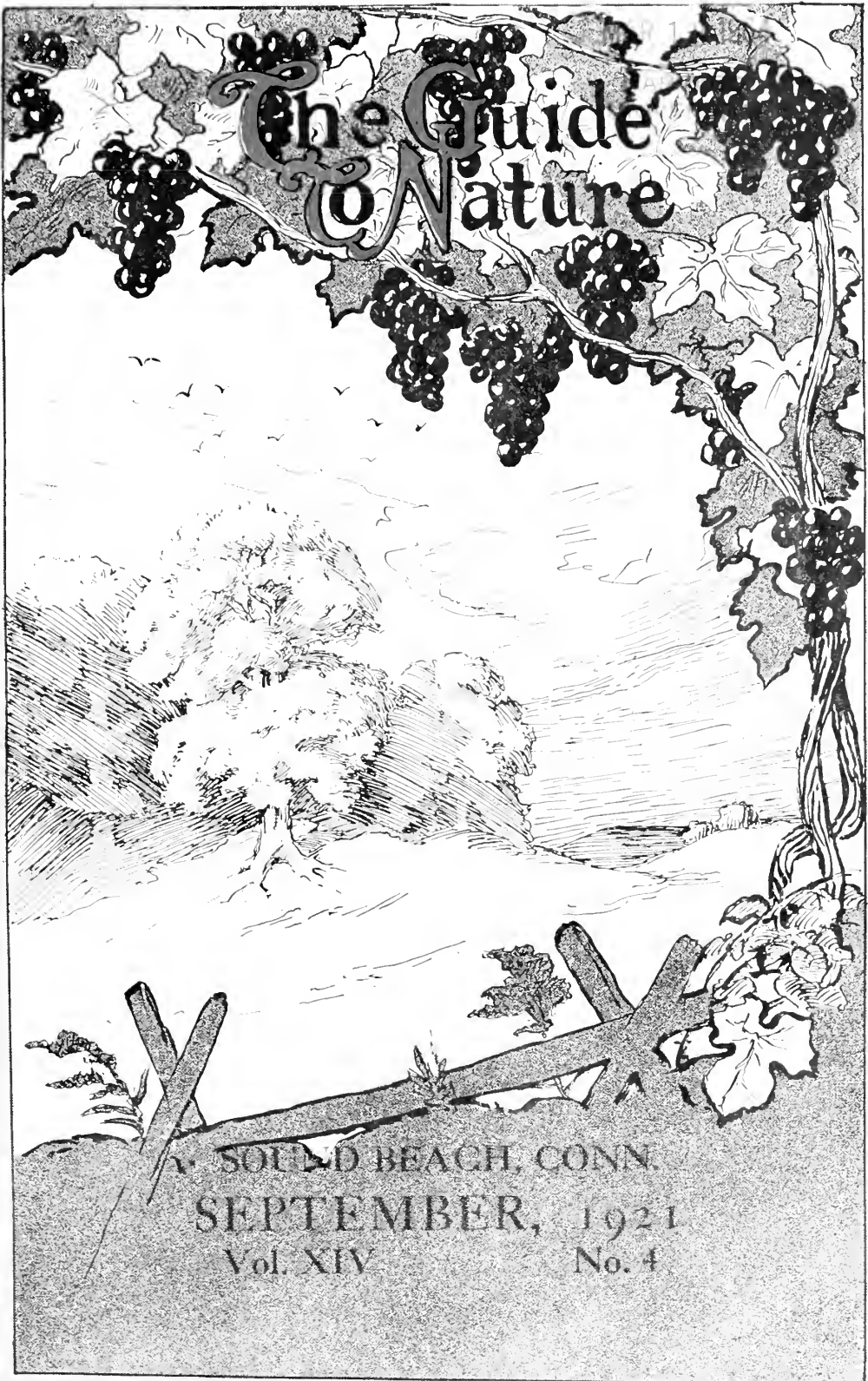
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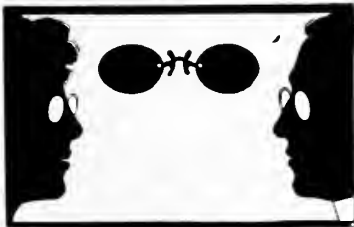
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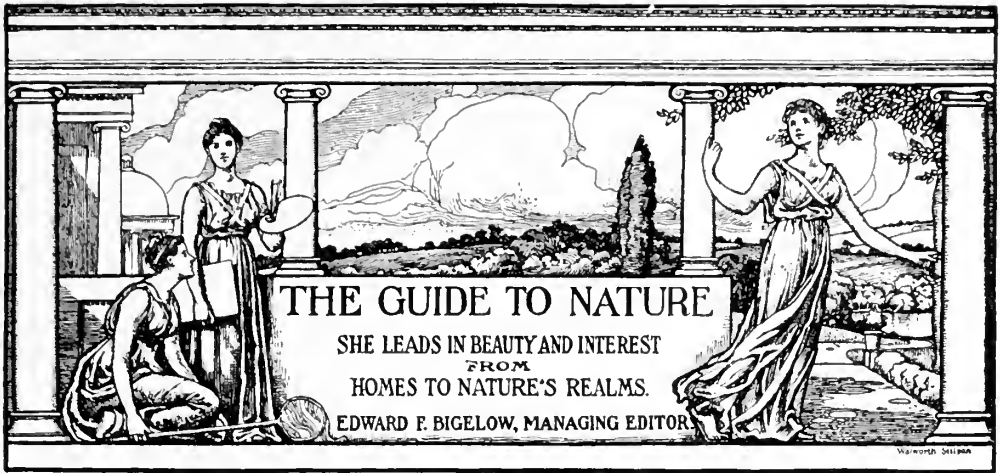
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Volume XIV.

SEPTEMBER, 1921

Number 4

The Attendance at the Bruce Museum.

It is gratifying to all connected with the Bruce Museum to observe that persons from all parts of the surrounding country are using the building and consulting the collections.

Not only do many persons visit the museum daily but many others use the telephone to arrange for special visits from schools and from classes in nature study. At first interest was lacking because the average smaller museum contains only a comparatively useless collection of curios and knickknacks covered with the dust of disinterested ages, but it soon became known that Greenwich possessed a museum entirely up-to-date, beautifully appointed and as fine in its exhibition material as any other institution of its size in the country. It is appreciated, for one reason, because the curators have endeavored to procure complete collections of the local fauna. Visitors frequently come to identify a bird or other animal that they have seen, while still others study the entire collections to make themselves acquainted with the local species of birds, insects, minerals, shells, etc.

Another important function of the museum is to aid schools in nature work and exhibits. Collections of birds, etc., are lent to any school desiring them.

It is interesting to note that since the opening of the museum visitors have come from every state in the Union except only ten, and from foreign countries including England, Russia, France, Italy, Sweden and Canada.

The number registered for the past three months is five hundred and four, and since the opening two thousand one hundred and eighty! This will doubtless be surprising, but many persons visit the museum that neglect to register. It is noteworthy that one-fourth of all those registered since the opening have come in the last few months, a fact that plainly points to the growing interest in the collections.

Now that the museum is so favorably established, it is to be hoped that more funds will be forthcoming to further and enlarge the work. No museum can be successful and stand still. The collections must be enlarged and other features be added in order to continue the educational work and to keep abreast of the times. Illustrated talks on educational subjects should be given regularly through the school year, and a moving picture machine should be installed for the same purpose. It is the sincere desire of the curators and of all concerned that these features may be added to the museum in the near future.

It is pleasing to note that numerous art students visit the gallery and other collections, and that the room for rest and reading is used by increasing numbers.

Work has been progressing on the magnificent collection of shells presented to the museum by the Smithsonian Institution of Washington. This collection, which contains nineteen hundred specimens, will soon be on exhibition in the department of fossils and shells. Another exhibit soon to be put on view is a preparation showing the similarities among embryonic mammals, and additional snakes are also in preparation. New and welcome colonial relics have been donated by Mr. Oliver G. Lockwood and Mr. George P. Rowell.

Eugenics and Euthenics.

BY ERIC KNIGHT JORDAN, STANFORD UNIVERSITY, CALIFORNIA.

(Note to the Editor: An examination paper as it was written by my son, aged seventeen, who has just completed his freshman year at Stanford.—Dr. David Starr Jordan.)

Through the study of bionomics one learns something of the "laws" or, rather, ways of action of living things in their relation to development from generation to generation. One learns, by actual observation, that the forms of living things are always changing in their characteristics, and that the changes are always in the direction of better adaptation to the conditions of life, and are always divergent, tending toward the production of new types. The chief underlying factors in this "evolution" of living things are: natural selection or the tendency for the individual better equipped for life among his surroundings to survive and produce offspring, and the principle of heredity with variation, by which the individual resembles its parents but never exactly resembles either of them or any other individual.

One learns that man, a definite species, is merely an outcome of the operation of these laws, a part of the whole system of natural evolution, and in no wise a separate creation. Man, as a development of this evolution of living things, is subject to all the laws of nature and, for that matter, is still in a process of change under their influence.

These latter facts are the basis of the science of *eugenics*, the art of having individuals well born, and *euthenics*, the

art of having them well brought up. With the lower animals it is found that, by the breeding together of types, offspring of any desired characteristics may be developed as long as there is variation of the parents in that direction. So also it is with man; if good stock breeds with good, good offspring will result, but if bad breeds with bad, the offspring will be bad. For instance, the breeding of goitered half-wits with other goitered half-wits produced the cretins, almost a distinct race, all of very low mentality, and all with goitre. Their further development was finally stopped by segregation of the males and females.

As to the practice of eugenics, although it is undoubtedly true that if the breeding of our men and women could ever be scientifically controlled by a Luther Burbank, it would be possible to produce any type of race desired, actually it is probable that any enforcement of the principles of eugenics can be only negative; that is, the segregation of the unfit from the fit and from each other, rather than any system of forced marriage between partners chosen by others.

The laws of euthenics, dealing with the influence of environment and not based so much on observation of the lower animals as of man himself, are also of great importance. Though an individual is born with only certain definite possibilities, drawn either from or through his parents, and though his later environment can never add to these, yet the influence of this environment may either draw out these possibilities to their fullest or dwarf them utterly. Thus the practice of euthenics, by providing education, etc., though it cannot increase the inborn potentiality, can provide that the men and women that should exist may become actualities.

June Tide.

Under the spreading maples
I lie in my hammock here,
And marvel at the richness
That comes with June each year.

So little while before
The leaves were locked up tight,
'Tis as if Pandora's box
Had been opened overnight,

And its contents flown to the winds,
Which have carried them far and wide,
Till now all things are whelmed
In a green and surging tide.

—Emma Peirce.

Our Friend, *Tamias*, the Steward.

The scientist who watches the habits of animals calls it *Tamias*, the steward, because it has such foresight in providing a supply of good things for the time of storm or of scarcity. But I imagine that the Indians were more attracted by its peculiar call than by its habit of storing. Perhaps they liked better what it had to say than what it did and so they called it chipmunk, a name that is uncertain in origin, yet is evidently imitative of its call. The chipmunk is a little fellow but he has been the cause of much argument because he has a wide range of characteristics. Most of us think of him as a gentle, dear, little home body that sits on the stone wall or rail fence or in some secluded place on the ground and "chips" for our benefit. He is endeared to us because of the wonderful stories told of his gentleness and lack of fear, especially in the northern woods. I know a man who is accustomed to lie on his back, put a peanut on his forehead when the chipmunk will mount the man's head, eat the peanut and drop on the man's closed eyes the fragments of the shell. I saw a woman sit in a tent and surrounded by several girls at the rest hour of the camp, when a chipmunk came in as he was accustomed to do every day, climbed into the woman's lap, and there feasted on the peanuts that she held between her thumb and finger. To tantalize the little beggar she held the peanut farther and farther away and he kept stretching up and up. No, you will not catch me in exaggeration for I shall not tell you how long that chipmunk seemed to become; I fear you would doubt my word.

There is another phase to this little ground squirrel that has always excited argument. How does he dig his burrow and leave no loose earth around the entrance? Some persons claim that the burrow which the chipmunk finally uses as a home is the result of digging from the other end and, abandoning that end, thus making a semicircular tunnel in the ground. Others say that it carries away the earth in its cheek pouches as it carries grain. A friend of mine says that he has solved the problem. Chipmunks that he kept in captivity loosened the earth and packed it in firmer by pressure. Every farmer's

boy knows that if he digs a post hole, sets the post in it, and packs the earth around it, he will have hardly enough to fill the hole. The chipmunk seems to have learned how to do that kind of thing.

There is still another impressive argument. Some claim, with the authority of observation, that our dainty little fellow is one of the most fiendish rascals on earth. He has been known to attack a bullfrog, tear off the flesh, and be so completely engrossed in his savage act that he could not be driven away. He seemed to be insane with an attack of savagery. He cared nothing for anybody nor anything. He only desired to fight. It is a curious fact that the dainty, cleanly little fellow that stores up nothing but nuts and grain eats all sorts of objectionable things, such as small birds, birds' eggs, grasshoppers and even snakes. He is also reported to be fond of snails. The chipmunk is a home body but to ascertain how much of a home body various experiments have been made.

Mr. Seton to identify a certain chipmunk put it in a bowl of deep blue and purple dye. The chipmunk splashed, as he says, "in such vigorous protest that everything within three feet looked very blue." Soon it became quieter and Mr. Seton even induced it to eat bread while sitting in the bowl of dye. When the chipmunk was well colored it was easily identified all summer. Most of the color disappeared except on the breast, throat and feet. The dye had little affinity for the fur. Chipmunks are extremely sociable and much given to making calls on one another. In some parts of the country the little animals are common. When they come out of their winter quarters in the spring, they make the woods ring with their social cries. Sometimes as many as fifty will come out together and hold a social reunion.

The Pheasant.

Ruby, emerald, topaz,

Are the gems the pheasant wears,

To brighten the brown of his feathers,

Like the forest through which he fares,

When fled are the flowers of Summer,

And the gay, painted leaves of the Fall,

He combines, in his wonderful plumage,

The exquisite tints of them all,

—Emma Peirce.

A New Variety of Water Lily.

The white water lily is the floral emblem of The Agassiz Association. We are therefore interested in anything pertaining to this beautiful flower. We are grateful to "Gardeners' Chronicle" for lending the accompanying cut of a new water lily, "Mrs. Edward Whitaker," with petals of a delicate blue and stamens a golden yellow. This was exhibited by George H. Pring, flori-

The Revelations of a Knot Hole.

BY W. H. H. BARKER, M. D., HARVEY, IOWA.

Many years ago the writer, sitting in a closed room on a sunny day, observed a keen beam of sunlight that, streaming through a knot hole in the weather boarding and wall of the room, fell on the floor at his feet, and there made a distinct spot of light. Glancing at this bright spot he noted that it was almost circular. Wondering at its



A BASKET BOUQUET OF THE NEW WATER LILY, MRS. EDWARD WHITAKER.

With petals of a delicate blue, shading into a deeper blue, and stamens a golden yellow, exhibited by George H. Pring, floriculturist of the Missouri Botanical Garden, and awarded the National Association of Gardeners' gold medal at the convention in St. Louis.

culturist of the Missouri Botanical Garden, and by the National Association of Gardeners was awarded a gold medal at the convention in St. Louis.

In the cut the petals appear to be a beautiful white. Light blue sometimes in a photograph makes a better white than a pure white does.

'Twas a stately banquet, as we saw at a glance,
Our own fair lilies, the lilies of France,
And, fresh from their purlieus, protected from cold,
Rare orchids of crimson, and orchids of gold.
—Emma Peirce.

perfect figure, he cast his eye upward to find the opening through which the light entered, and was surprised to see an aperture that was small and irregular in shape. It seemed an anomaly. Close observation repeated under many conditions brought out the fact that sunlight, at any time of day, entering an aperture and falling on a level surface at some distance from the point of entrance, does not take the form of the aperture but has a tendency to obliterate the angles and to round them into curves. Let any one interested note the dancing sunlight that

falls on the ground beneath any shade tree on a sunny day. It will be observed that the figures cast are circular. This effect is interesting to note.

On what law of nature does it depend and what is its signification?

* * * * *

These observations are not very definite as to the size of the hole but they seem to me to be correct. Any such small hole makes what is known as a pinhole camera. An image of the scene outside is formed on the screen which is the wall or side of the room. The images seen were not of the hole but of the sun itself. Hence they were elliptical or circular. In times of solar eclipse, when the sun is not circular, the images are of the same shape as the sun, and discussions of eclipse often state that if one looks under trees the crescent-shaped images of the sun will be seen on the ground, or if the sun shines in a dark room through a small hole the eclipsed sun can be seen. I have often seen this. I heard a colander, the ordinary household utensil, suggested as a thing full of small holes, each of which gives a small image of the sun, but in trying it I did not have much success.--Professor Samuel G. Barton, University of Pennsylvania.

A Flower Fantasy.

The Spring is a-blush with color,
It fairly glints and glows;
It poses among the seasons
As a great, warm-hearted rose.

A water-lily floating
On the cool lake's placid breast,
Best typifies the Summer,
Its serenity and rest.

A peony's crimson beauty
Suggests the Autumn blaze,
When it proudly rears its sumptuous head,
And the sunlight o'er it plays.

The gleaming white of dogwood
Most rivals Winter's snow,
And is emblematic of the time
Of cold and firelight-glow.

—Emma Peirce.

Not all snails which kill and eat clams operate by boring through the shell. Some, it appears, smother the clam by enveloping its syphon with the foot until the victim is smothered and dies. Then, of course, the shell opens and the snail devours the body.

Peat in Connecticut.

Mr. Edgar S. Weed of Stamford has presented us with an interesting specimen of peat which he states was found some ten feet in the ground in digging a well on Clinton Avenue, Stamford. The specimen was referred to Professor William North Rice of Wesleyan University, Middletown, Connecticut, and he writes as follows:

"Deposits of peat are very numerous in Connecticut. The area of any individual deposit is usually not very great. As regards their geological history, it may be said that they are among the consequences of the events connected with the Glacial period. The irregular deposits of drift, which were left in helter-skelter fashion when the ice melted away, obstructed the courses of many of the small streams, and made numerous changes in the directions of drainage. In many places the surface of the drift was marked by shallow basins which, after the retirement of the ice, were occupied by water forming lakes and ponds. Ponds of various sizes are still very numerous in Connecticut, as in all glacial regions, but many of the lakes that existed immediately after the Glacial period have been filled up or drained. Often a transitional stage in the filling or draining of a lake is represented by a swamp. Naturally swamps are very numerous in Connecticut. A lake may be filled by sedimentary material brought in by rainwash or by inflowing streams, or it may be filled in large part by the accumulation of the products of decomposition of vegetable deposits. In the latter case we have a peat bog."

To Wild Gardens.

Wild gardens by the roadsides,
And clambering up the hills,
Carpeting the meadows,
And bordering the rills;

Wild gardens on the mountains,
And by the Summer sea,
With denizens of butterflies,
And swift, industrious bee;

Rioting in color,
Sweet with perfume too,
Brightening every vista,
Framing every view;

Nature's truant children,
Roaming at your will,
With beauty you're incarnate,
With joy our summer fill.

—Emma Peirce.

In Appreciation of My Friends, Literary and Other.

BY THEODORE H. COOPER, BATAVIA, N. Y.

In front of me are my chemicals and apparatus from which I have derived more pleasure than I can well express. I have lived with my books and this apparatus, and have absorbed knowledge from them as leaves absorb sunlight. I have not "studied" science or books in the ordinary sense of the word. I have grown into them. Every day for years, for a few minutes a day at least, I have dipped into books and sat in my library with them at my elbow. Through my "playing" and tinkering with my microscopes, test tubes, beakers, etc., they have become my friends. I know them and I should be lonesome if long separated from them.

When I am about to buy a book or an instrument I ask, "Is it interesting? Will it be stimulating of thought? Will it help me to understand something about which I wish to know? Is it something that it will be a joy to possess?"

I have things, many things, that are much more valuable to me than they would be to anyone else, but only for the reason that I know more about them. When I look at one of my test tube racks it suggests pleasing recollections. I made it one night when I was a night fireman. It was the first test tube rack I ever had, and about the first that I ever saw. I had but little apparatus then, and how I used to watch for the expressman to come with that box of glassware from Eberbach's. I had read and read about chemistry and about making experiments, and now I was to have some apparatus of my own. The pleasure in anticipating was not less than the experimenting itself. The same with books. How eagerly I have watched for the postman. He has brought me more good things than I could enumerate in a good sized volume. A new book by Burroughs, or on one of my favorite sciences, or a letter from a distant friend—I cannot express just the feeling of welcome companionship a letter from some new correspondent has so often brought me. No one ever had a more affectionate regard for his correspondents than I have. I should make a poor hermit unless I could have a good sized mail box at my cave.

With me a test tube is not a tool; it is a friend. My books talk to me, advise me, cheer me should an unfortunate event afflict me. I never study them. I ask them questions; I philosophize with them. When, as is often the case, my purse is slim, Thoreau and a host of others come down from their shelves and tell me how much more I already have than I really need. When I have been disappointed at not receiving an answer to a letter, or on finding that the book I ordered is out of print, Walt Whitman and Burroughs make the matter dwindle to nothing by a broad sweep of the pen.

I have only a small room with books and a desk on two sides and apparatus on the other two, but what a mine of good things there is here for my inquisitive and reflective mind. I sit here and read or think for hours at a time. I do not know what my books have cost me; I keep no ledger.

I have no newspapers and know nothing about the latest crimes that have been committed. I am not a reformer. I am satisfied with things as they are. I am so intent upon enjoying the good qualities of my friends that I have no time to consider how much better those qualities might be. No doubt evil people exist, but for every evil one there are two good ones. It is easy for me to accept this majority. I have no quarrel with the money-makers nor with those who have viewpoints differing from mine. They have the same right to their opinion that I have to mine. May they always get as much pleasure from following their chosen pursuits as I have had from following mine.

I have lived in the city and in the country. I have found it good to live in either place. If you are of an easy-going, peaceful disposition it is easy to find friends in either place, and enemies too if you are so inclined. But when I know there is a hornet's nest on one side of the fence I usually take the other. There is a good old saying that it is better to bend than to break.

The newly discovered Arctic lands north of North America and hardly ten degrees from the pole support thirty indigenous species of insects, seven spiders, five birds and nine mammals.

Betsy and Her Friends.

BY WILLIAM H. HUSE, MANCHESTER, NEW HAMPSHIRE.

Betsy was a wood turtle and I hope still is. Brought to school by a boy one day, she was given the freedom of the classroom and for a year or more made herself at home among the pupils' feet, showing no fear and attracting little attention from the children after the first few days. We found her to be almost omnivorous with a preference for vegetable food, and soon she learned to take food from a human hand without hesitation. The only thing she tasted but once was a chocolate cream of the sticky kind. Her confidence in me induced her to take one bite but she had so much difficulty in swallowing it

visitors before or after the sessions. The children learned the names of the common species and I doubt if many of the boys afterwards took pleasure in killing the wild specimens that they found.

It was while we had all the specimens together that I learned that they were affected in some way by music. The teacher reported that they appeared to be listening when the music lesson was in progress. The next music period found me in the room watching them. Before the lesson began the turtles were moving slowly about but the moment the singing commenced every head was up in a listening attitude, and I failed to see a movement of head or foot till the music lesson was ended. What their



"BETSY."

that she would never touch another. She took food from me but would seldom take it from strangers.

The sand on the floor, brought in by the children, wore the skin on the soles of her feet almost to the quick, and the teacher of the room was seriously thinking of making chamois skin socks for her when I transferred her to the pen with our other turtles in another room. Here were representatives of all the species found in the state—not a large number. They were the common painted, spotted and wood turtles, the less common snapping, musk and Blanding's box turtles, and the common box turtle which is very uncommon in New Hampshire, being found only in the extreme southern portion of the state. Two southern species completed the collection, and the turtle pen was a never ending source of interest to the pupils that passed through the room. Seldom was the "zoo" without

sensations were of course I could not tell. It is reasonable, however, to believe that they were pleasant, for had they been otherwise the turtles would have appeared restless. There are some people who cannot sing a note and yet are fond of music. Are they all related?

I finally decided to give up my menagerie and turned the turtles loose. The next summer I found the empty shell of a Baur's turtle that came from Florida but found no remains of the northern species. I sincerely hope that they lived "happy ever after."

"If you are thinking of giving your boy the present of an air rifle," warns the *Bulletin of the Audubon Society*, "don't do it." Among other excellent reasons, if the boy is under fifteen, the Massachusetts law makes you liable to fifty dollars fine!

TO KNOW THE STARRY HEAVENS

The Heavens in September.

By Professor Samuel G. Barton of the University of Pennsylvania.

THE bright planets, Jupiter and Saturn, which have been objects of interest in the evening sky for many months, are now too close to the sun to be seen. The sun passes Saturn September 21 and Jupiter the next day. These planets will then be morning stars for about six months. On Sep-

tember 14 Jupiter passes Saturn, or is in conjunction with it as the astronomers call it. This conjunction has been ascribed as the cause of the unusually high temperatures prevailing this year. I have seen no good reason for accepting this as a cause. Such a conjunction



Figure 1. The constellations at 9 P. M., September 1. (Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.)

tember 14 Jupiter passes Saturn, or is in conjunction with it as the astronomers call it. This conjunction has been ascribed as the cause of the unusually high temperatures prevailing this year. I have seen no good reason for accepting this as a cause. Such a conjunction

range, however, is not great. No reason for this period is known. As temperature changes on the earth as a whole are primarily due to changes on the sun there have been many attempts to find the reasons for the changes in the sun's condition. In particular attempts

have been made to connect temperature changes with sunspots. The temperatures are slightly higher at sunspot minimum and it is now the time of sunspot minimum. As the period of the sunspots is nearly the same as the period of Jupiter's revolution about the sun, attempts have been made to associate the two. Saturn also and other planets have been suspected of having an influence. The subject is still under investigation.

None of the brighter planets are now visible in the early evening. Uranus is in Aquarius but not visible to the naked eye. Venus is brilliant as a morning

fourteen minutes longer than the night. This lengthening of the day at the expense of the night comes from the fact that the sun is counted as rising when its upper edge first appears above the horizon and considered as setting when its upper edge disappears. The refraction due to earth's atmosphere raises the sun a distance about equal to its diameter so that we see it rise about two and a half minutes sooner than we otherwise should and set later by the same amount. The fact that we use the edge of the sun instead of the center makes another minute difference in the times of rising and setting. In high lati-

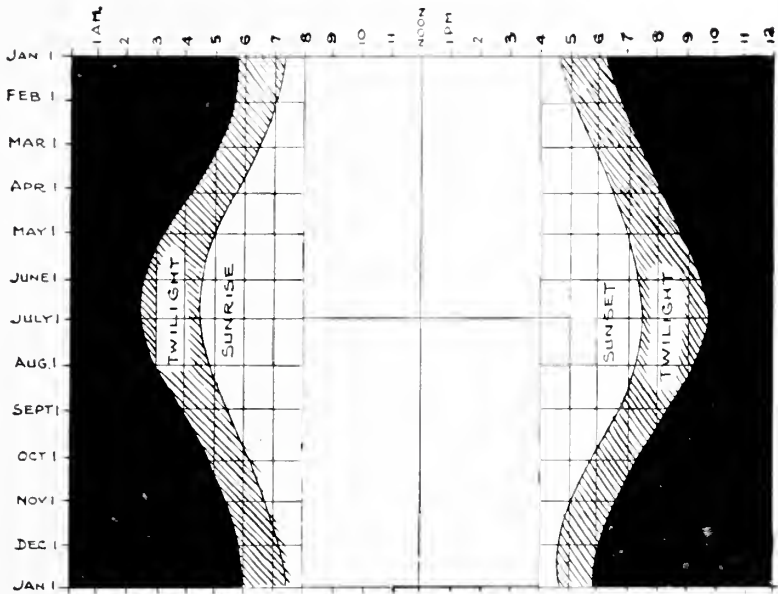


Figure 2. Chart showing times of sunrise and sunset, length of day and night, etc., for latitude forty degrees.

star. On September 13 it makes a close approach to the planet Neptune. At seven o'clock in the morning of that day the two planets are closest, five minutes apart. As Neptune is always invisible to the naked eye a telescope is necessary to see this planet.

* * * * *

The Equinox.

On September 23, 9:20 eastern standard time, the sun crosses the equator going southward and autumn commences. This time is called the autumnal equinox because the day and night are of equal length. Strictly speaking, however, this is not true. On this day the sun rises at 5:49 A. M. and sets at 5:56 P. M. The day is thus

tudes these differences are greater. It will be noted that the sun does not rise and set at six o'clock even disregarding these effects. This arises from the fact that our time is based upon the mean sun, which is at this time about eight minutes behind the real sun. Moreover the times of sunset and sunrise are always expressed in the mean time of the observer, whereas we ordinarily use standard time, which is the mean time at the place adopted as standard. As this may differ a half hour or more from the mean time at the place of the observer, or even more than an hour and a half if daylight saving time is used, the almanac times may differ greatly from the time of the event by the watch.

In Figure 2 are shown the portions of the twenty-four hours which are night (in black), daylight and twilight, in the different months of the year, for latitude forty degrees. From this figure may be read the times of sunrise and sunset and the duration of twilight. The twilight is shortest about March 3 and October 1 and longest at the summer solstice, June 21. Its length varies from an hour and thirty minutes to two hours. The figure shows that the daylight decreases from fifteen hours one minute at the summer solstice, June 21, to nine hours nineteen minutes at the winter solstice, December 22.

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Daylight Saving.

The purpose of the daylight saving scheme is that we should sleep during the hours of darkness and reserve the daylight for our activities. During the winter when the days are short we ordinarily do this, but during the summer we do not. From May 1 to August 3, for instance, the sun rose earlier than five o'clock. Those sleeping as late as five o'clock wasted the daylight and the morning twilight too. The twilight, however, is less important, not only because the light is less intense but also because some of the twilight time must be used to secure eight hours of sleep.

The reasons for daylight saving time exist principally in the middle latitudes. At the equator, for instance, the sun rises at nearly the same time each day, varying only from 6:11 A. M. in February to 5:40 in November. There is no reason for a time in part of the year different from that in use in the other parts. In high latitudes where there is a great variation in the time of sunrise throughout the year there is also little need of daylight saving time. In Figure 3 the times of sunrise and sunset are shown for the equator and for a latitude of sixty degrees, which is about the latitude of the southern coast of Alaska. At the latter place the change from short days to long days is very rapid. The sun rose at six o'clock on March 20 and at five o'clock April 9. The days increased nearly two hours in length in this brief interval of twenty days. When the days are short the daylight would all be used as here in winter. When the days are long there is more daylight than can be used, so that con-

servation is not necessary. Farther north there is still less need of daylight saving plan. At the pole itself, where it is about equally light or dark throughout the twenty-four hours, it matters little when one sleeps.

If the hours from 8 P. M. to 4 A. M. were devoted to sleep the daylight

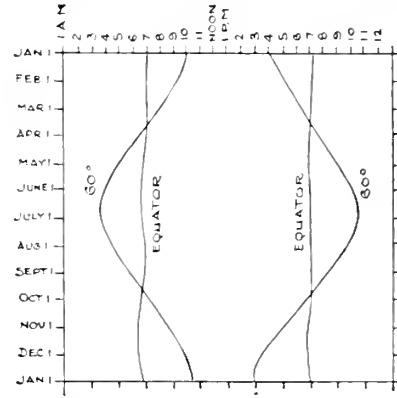


Figure 3. Times of sunrise and sunset at equator and in latitude sixty degrees.

would be conserved everywhere. There is, however, a human disinclination to rising before the sun. "Early to bed and early to rise" is a good rule—for the other fellow. Hence we have adopted habits suited to winter rather than the whole year and the habit once formed of doing things at definite hours we object to change. If the sun is shining we do not object to rising earlier in itself but after rising at seven we hate the thought of rising at six. If we call it seven we are satisfied provided the hours of duty are also set forward, for it would be difficult to rise before our duties compelled us to. The whole reason for daylight saving time is thus a psychological one.

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The New Celestial Object.

For a few minutes before and after sunset on August 7 a celestial object brighter than Venus was seen near the sun by five observers at the Lick Observatory. The number and character of the witnesses make the reality of the observation unquestionable. The object was three degrees east of the sun and one degree south of it. The object was believed to be either the nucleus of a comet or a nova (new star). In either case it was a very remarkable object. The great comet of 1843 was discovered very near the sun

with the naked eye as was this object. This comet was probably the brightest ever recorded. No nova has appeared which has been as bright as Venus, so far as we know. If the object were a comet its motion would soon carry it away from the brilliant sun and make it conspicuously visible. If a nova its position among the stars would not change but the sun's apparent motion among the stars would take the sun eastward a degree each day and thus after a time enable us to see the star without the interference of the brilliant sunlight. A nova decreases in brightness rapidly. When the sun is sufficiently far from the position in which the object was seen we can examine the region and perhaps identify the object as a nova.

Although careful search has been made, so far as I know the object has not been seen since its discovery. The report from Germany that we passed through the tail of a comet on August 8 seems to be without foundation. The fact that the object was near the sun made it probable that it was a comet. The failure to find the object again now makes it more probable that the object was a nova. Were it not for the fact that the nonexistence of an intramercurial planet of this brightness seems so conclusively proven we might think that it was such a planet. Several observers of earlier times have claimed that they have seen such a planet.

The Breeze.

BY MAUD A. NEWCOMB, NEW YORK CITY.

A fresh little breeze
Stirs the blades of grass,
And puffs at the butterflies
As swiftly they pass.
It makes the leaves dance,
And bends the slim trees—
Th's gay and frolicsome
Fresh little breeze.

It scatters the petals
From lilac and rose,
It frouses your hair,
As it playfully blows,
And it jostles you rudely,
And never says "Please"—
But you love it—this frolicsome,
Fresh little breeze.

The little spring birds
Snuggle warm in their nests,
As the wild, merry breeze
Rumples feathery breasts,
And the sheep in the pasture brook
Up to their knees
Just sniff at this frolicsome,
Fresh little breeze.

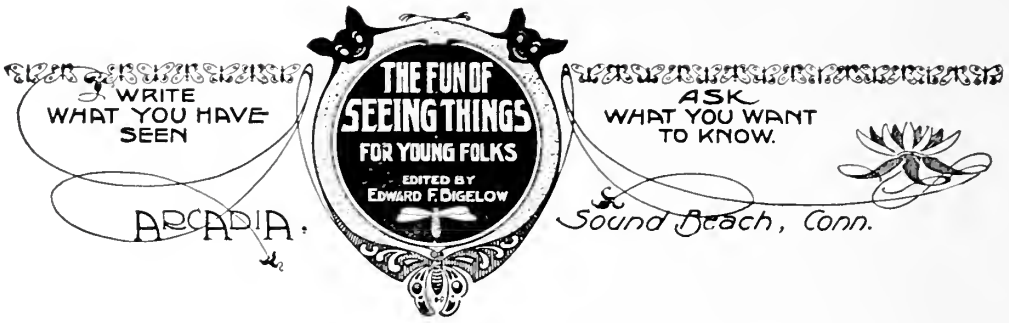
The book of nature is always open winter and summer and is always within reach, and the print is legible if we have eyes to read it. But most persons are too preoccupied to have their attention arrested by it—John Burroughs in "Field and Study."

August brings the jewel-weed
To make the roadsides gay
With amber and with topaz glints
Like sunbeams there at play.
—Emma Peirce.

NATURE.

BY HAROLD GORDON HAWKINS, WESTFIELD, MASSACHUSETTS.

When that day comes that I shall feel no more
The magic influence of Nature's lure,
When she shall cease to keep my weak soul pure
With sagest teaching of her world-old lore,
When I lose power to garner from her store
Of matchless beauty thoughts that can conjure
My mind from lesser things and swiftly sure
Direct it to a higher plane once more;
When Nature's voices cease to speak to me,
When all her grandeur is to me as nought,
And worthless are the bounties she may give,
When my dull soul knows such despondency
That it denies her works a single thought,
Then let me die for I have ceased to live.



The Swift Motions of Small Animals.

BY W. H. H. BARKER, M. D., HARVEY, IOWA.

Swiftness of motion is an essential requisite of many wild animals of the smaller kind. It is one of their most important means of defense. Perhaps no known animal possesses this in a higher degree than the weasel. He is the "lightning flash" among all animal life. A single instance will illustrate this. The writer was once standing on a board sidewalk. At his feet, almost at his toes, was a two-inch auger hole in a plank. Through this was suddenly thrust the head of an audacious, full-grown weasel with a whistling call and a challenge for a fight. A swift kick sent him chattering out of sight, only instantly to reappear, with head and shoulders through the hole. Half a dozen times were the kicks and the swift dodges repeated. Then occurred a change of program. Calculating time closely a kick was given before the head was seen, and it caught the little animal unawares, and of course ended the performance on both sides. But the kick had caught only the tip of the little animal's nose as he came up and not as he went down.

Not often does the little fox squirrel give man a chance to attest his quickness. The writer has had one opportunity to make such a test. As I was standing close beside a large forest tree, a young but full-grown squirrel suddenly thrust its head almost in my face. Short of rations, out on a tramp in the woods and hungry, here it seemed was a chance for a meal. Hatchet in hand, a lightninglike stroke was made at the little imp, but when it struck the tree the squirrel was on the other side. The weapon was scarcely recovered when the squirrel was back ready for another trial of skill. The

blow and the dodging were repeated again and again but to no purpose. Finding all efforts to capture the little scamp were useless we let him sit and chatter at us in pure squirrel delight at our discomfiture. We went our way, having learned another lesson as to nature's ways of shielding her little people in times of danger, and inwardly admiring the agility of my would-be capture.

An Unusual Rattlesnake.

BY F. H. SIDNEY, WAKEFIELD, MASS.

Mr. R. M. Smith and his son, Robert, of Sheffield, Massachusetts, with a forked stick captured alive at Black Rock, Mount Washington, Massachusetts, a white rattlesnake which has been shipped to Mr. Raymond L. Ditmars, Curator of the New York Zoological Park. Mr. Ditmars saw this snake last year when rattlesnake hunting on the mountain but it got away from him. The rattler is two feet long and has two rattles and a button. Its eyes are pink and its white skin is dotted with pink spots. The specimen is said to be the only one of its kind in existence.

Black Snake Warnings.

BY C. D. ROMIG, AUDENRIED, PENNSYLVANIA.

While viewing from some rocks during cool weather I nearly trod on a large black snake coiled there and which gave warning by rattling the dry leaves with its tail in a way similar to that of a rattlesnake. The tail seemed to vibrate rapidly on the leaves.

This I have observed before and, as I recall, in cool weather. It may be a sign of fear or of helplessness. In warm weather the black snake usually runs away as fast as possible when attacked.

Novel Pinning Board.

Ontario, California.

To the Editor:

I have found out something so good while here for the summer school that I must pass it along.

I am mailing you a small log of yucca flower stalk, Spanish dagger, which grows in the mountains and gravelly wastes among the foothills here in southern California and elsewhere in the arid southwest. The pith makes the most excellent pinning board for spreading insects. It is actually a pleasure to work upon it. I whittled out one for the children and we have put it to use already. I find it no trouble to cut up with a rip-saw. There is enough material in the piece for two boards including the middle pinning strip and cleats. I put the one I made together with common straight pins. The stuff can be cut as thin or as thick as one likes.

These stems are useful material if taken before beetles destroy the pith. I found old stems untouched by larvae among others that were practically hollowed; near-by were fresh stems just dropping their petals yet riddled with punctures as though struck by charges of bird shot. I found in one stalk, a fresh one, literally hundreds of beautifully tinted blue-green larvae of a small moth. With them were found many small grubs of some three or four kinds and an occasional large one resembling the goldsmith. I have never seen such noble plants, environment considered, except it be trees.

FRANK B. HOPKINS.

Mr. Hopkins very kindly sends us drawings showing how he makes the pinning boards and has contributed to *ARCADIA* a large piece of the yucca stalk.

Broom Holds Water.

BY C. D. ROMIG, AUDENRIED, PENNSYLVANIA.

Dip a broom in water and quickly take the handle horizontally in both hands and with one hand twirl it slowly, using the other hand as a bearing, and hardly a drop of water will fall, after a little practice, even when the broom is soaked completely full.

This is useful in an emergency for sprinkling floors or to dampen anything on fire, or for similar purpose, and was discovered in this way by the writer.

English Sparrows Injure Corn.

Lawrence, Kansas.

To the Editor:

I read in the August number of *THE GUIDE TO NATURE* the short article by Miss Wilson on English sparrows and corn pollen. My experience with corn and sparrows was not so fortunate. She thought they fertilized the corn and they may have in her case, but in my case they began to eat it before it was ripe enough for the disturbance on it to fertilize the silk. They ate so greedily that by the time the pollen was ripe enough to fall either of itself or by their movements in it so much was gone that the ears of corn were very poorly filled. I never had seen English sparrows so thick in the corn patch and I never before had such poorly filled ears.

MARY M. PALMER.

Cities and Plant Growth.

The farther away from a city they are the better the lichens grow. A lichen is seldom seen on a tree or a rock within the settled portions of a city and its immediate suburbs. But the reverse is true with gardens. The nearer to the city the more numerous and luxuriant the gardens. This observation is prompted by a recent railroad trip through New England. Gardens are frequent along the city portions of the railroad but in the strictly farming territory they are not numerous. Some six hours' railroad riding through the state of Maine revealed not a single garden that could be favorably compared with many in Sound Beach, notably our own *ARCADIA* garden. Why is that? One wonders especially in Maine what garden truck the farmers live on as the garden crops or, for that matter, other crops are few and far between. Nearly all the tillable land appears to be devoted to hay with seldom any crop requiring plowing and planting.

Two Crescents.

A crescent moon in a sunset sky,
A silver scimitar poised on high,
To cleave the darkness of the night,
And let us share its Heavenly light.

A crescent isle in a sunset sea,
Beck'ning afar to you and me;
And we're hasting o'er the ocean's calm,
To seek anew its rest and charm.

—Emma Peirce.

Real vs. Trash Reading.

BY THEODORE H. COOPER, BATAVIA, N. Y.

It is surprising to the naturalist to see the books and magazines that are on sale at the average bookstore and that are read by those who are presumed to be out of infancy. As Thoreau said, "Why do they read their A, B, C's all their life?" From the "Turrubul Sam" and the eternal triangles of the "moovis" they turn to the latest novel on the same subject.

An extraordinary tree or some other curiosity may find its way to the papers. It is exploited for its value as a curiosity though and not as an object of nature. For "natural nature" the average person cares very little. I have tried to interest some of them and I can echo the editor of one of our western magazines when he observes, "They don't care a hang about it and never will."

What a relief it is to turn from the contorted, spectacular nature that represents the scientific feature of most of our magazines to the simplicity and naturalness of *THE GUIDE TO NATURE*. The common, near at hand things that we can all see are shown in this magazine, and those are the things worth knowing about.

Arcturus is more interesting to me than Canopus because I can see it. A crow is more interesting than a condor because we have seen it and heard it caw. Things are of interest in proportion to how much we know about them. The best way to make ordinary things of interest is to read about them. *THE GUIDE TO NATURE* furnishes such reading. It was only by the accidental finding of a copy of "The Observer" that I came to know of this delightful little magazine, for since the average man in the street would not find anything of interest in it the bookstores do not have it.

The fruit of *Ulotia phyllantha*, a rare moss, was long unknown, and until it was found by Thomas Howell in Oregon in 1885 had not been described. While working at Kew in 1888, "a sharp-eyed American lady (Mrs Britton of Columbia College) found five capsules on the specimens collected by Schimper himself at Killarney, Ireland, but which had not been noticed."—(Braithwaite *British Mosses*, Vol. 2, p. 97. 1889.)

A Rope of Dust.

BY CHARLES D. ROMIG, AUDENRIED, PENN.

On an automobile trip one summer day my attention was called to a whirlwind about a block ahead of us on the edge of a village. The roads were dusty and the wind had caught the dust up so that it looked exactly like a rope hanging from the sky.

No doubt this was a young tornado, too young to do any harm. This rope of dust was about as thick as a garden hose and for a brief period appeared to be truly vertical. The length must have been more than two hundred feet.

The Mountain Top.

A delectable mountain top it is,

Breezy, cool and sweet,
Where moss and potentilla make
A carpet for our feet.

Where lady spruces trail their robes
Over ledges bare,
And garlands wreath of clustered cones
In their fragrant hair.

Where little birches straggle up,
The evergreens among,
And worthy, withe-rod's blushing fruit,
To be of poets sung.

Where there is spread before our eyes
A panorama rare,
Of hill and dale, of wood and field,
With homesteads nestled there.

A silver river winding down,
To merge into the sea,
With islands dotting all the bay
As far as we can see.

A lake embosomed in the hills,
A perfect mirror there,
Reflecting wooded shores and farms,
And all its framework fair.

With distant mountains looming up,
Into the ether blue,
To hold our beauty-seeking eyes,
While limiting the view.

A wonder mountain top indeed,
Its magic half untold,
But making us, with every climb,
Richer a hundred fold.

—Emma Peirce.

Professor Frank G. Speck, of the University of Pennsylvania, has had published by that university an interesting monograph on the "Bird-lore of the Northern Indians." The pamphlet contains much of popular interest and is adapted to the general reader as well as to the professional ornithologist.

Look Up and Down.

"Look up and not down," a revered seer wrote,

But I say look up and down;
Look up at the sky, and the rounded hills,
And the peaks that on us frown.

Look up at the twinkling stars at night,
And the planets' steady glow;
Trace out the constellations there,
As they silently come and go.

Look up at the trees with the'r groined limbs
That cathedral arches make;
At the continent clouds that are drifting by
With the shadows in their wake.

Look down at the greensward, velvet
smooth,
So refreshing to the eye,
At the wondrous forms and tints of flowers
That pass in procession by.

Look down at the riotous wealth of life
That covers each foot of soil;
At tranquil streams with their silver gleams,
And the rapids' swift turmoil.

Look down at the sand of the ocean strand,
Hardened by thunderous shocks,
And be sure to look, at extreme low tide,
For "aquariums" 'mong the rocks.

"Look up" and down, "look out" and in,
"Look forward" where you stand;
Look all about, wherever you are,
And always "lend a hand."

—Emma Peirce.

The mountain laurel in some places is becoming exterminated by its admirers, who use it for Christmas decorations.

The Massachusetts Audubon Society has a "movie" based on Longfellow's "The Birds of Killingworth" which will be seen during the coming year by a million children.

The list of the beetles of North America printed by Samuel Henshaw in 1885 contained nine thousand species. Charles W. Leng's new catalogue has almost nineteen thousand.

A new Chinese natural history museum, the first in the republic, is to be one outcome of the expedition to central Asia which the American Museum is sending out. The expedition is to furnish the new institution with duplicates of all its collections, and also to take along a number of Chinese students for training in collecting methods.

LITERARY NOTICES.

CLOUDS. By Geo. Aubonne Clarke. New York City: E. P. Dutton & Company.

This is an elaborate treatise of the subject, yet it is written simply and concisely. It will be a delight to the teacher of meteorology or of general nature study as well as to that increasing class who are taking more and more interest in a study of the weather. The photographic illustrations, full page plate after full page, are all that the lover of photography and of good engraving and printing can desire. They beautifully depict every form and variety of cloud known to science.

THE WAY OF A TROUT WITH A FLY. By G. E. M. Skues. London, England: A. & C. Black, Ltd. American Agents: The Macmillan Company, 64 & 66 Fifth Avenue, New York City.

This sumptuous volume will delight, from the literary as well as the practical point of view, every expert lover of trout fishing. Each phase of the subject is discussed in detail, including the characteristics of the trout, and not excluding some of those possessed by the whipper of trout streams. The book contains not only practical advice but sundry observations, psychological, jocular, wise and otherwise. The illustrations are in every way praiseworthy.

LIFE OF ALFRED NEWTON. By A. F. R. Wollaston. New York City: E. P. Dutton and Company.

The letters and journals of Professor Newton of Cambridge University, England, who died in 1907, have been collated by Mr. Wollaston, one of his pupils, in an interesting and appreciative memoir. The work has required the painstaking labor of several years. The biography is of general interest to all students of science but is more especially so to those who were the professor's personal friends. Much of the book is too personal to be of general interest. Professor Newton was an enthusiastic and accomplished naturalist and scientist.

A bill before the Maine legislature will make a state park of the region of Mt. Katahdin, Maine. The district is in the central part of the state, very wild, inaccessible and little known. The mountain, 5,248 feet at its highest and therefore taller than anything else in New England except two or three of the Presidential Range, has no proper peak, but is a squarish plateau with a long curved ridge extending off from it and somewhat higher, much like the body of a tadpole and its tail.

"My Window."

"My window" rainbow greeting gives,
 When on the Avenue we go,
 With some blooms brighter than the dawn,
 And others chaste as Winter's snow.

Orchids, roses, friendly rivals,
 In the floral contest there,
 Japonicas among the fairest,
 In a group where all are fair!

Chrysanthemums in all their phases,
 "Buttons" to the queenly blooms,
 That just now in their profusion,
 Lend a grace to all our rooms.

Cyclamen, those errant beauties,
 Reveling in brilliant tints,
 Though not outshining primrose neighbors,
 With their softer, paler glints.

Snapdragon's spikes of shell-like petals,
 Dipped in sunset rose and gold,
 Charming now, among exotics,
 As in grandmother's garden old.

Other flowers their prestige lending,
 Fragrant violets and sweet peas,
 With maiden-hair and smilax forming
 A graceful foil for all of these.

When Wintry blasts without are raging,
 The Summer a forlorn "has-been,"
 How more than cheery to those passing,
 This sumptuous flower-warmth within!
 —Emma Peirce.

A member of Professor J. B. Woodworth's class in geology at Harvard, while working in an old quarry in Attleboro, had the remarkable fortune to discover the footprint of a creature unknown to science. The animal must have been of some size, since the front foot gave an impression an inch and a half long, and the hind foot one of nearly two inches and a half. Apparently the unknown beast was a reptile, of the general type of the great dinosaurs which made the well-known tracks at Turner's Falls and elsewhere in the Connecticut valley. But the rocks in which the newly discovered tracks appear are much older than the Age of Reptiles. In fact, they probably belong to a time shortly before the Coal Period. Since the most ancient similar creature thus far discovered is from the Coal Measures of Ohio, this new find may prove to be the earliest known reptile.

A will-o'-the-wisp is Spring,
 Ever dancing before our eyes,
 Yet ever holding aloof,
 The dearly coveted prize.
 —Emma Peirce.

Fireflies.

Little fairy lanterns
 Flitting here and there,
 Bearers quite invisible
 In the darkened air.

Spangling dusky tree-tops
 Jewels on the flowers,
 Giving lightest, daintiest touch
 To the evening hours.

Gleaming in the grasses,
 Lighting fields afar,
 Now and then one soaring high,
 And taken for a star:

Fitful flickering,
 Flame and then eclipse,—
 'Twere hard to do you justice, quite,
 With our human lips.
 —Emma Peirce.

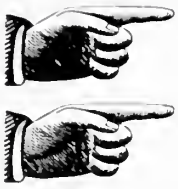
Moles, whose diet is largely earthworms, eat these almost continuously during waking hours.

The Alaskan salmon fisheries alone yield yearly more than seven times the entire original purchase price of the Territory. Yet these fish, unless something is done promptly, seem destined to go the way of the New England salmon, now almost extinct, but which once were abundant beyond all counting.

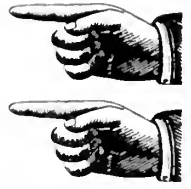
The earliest mathematical work printed in America has been supposed to be that by Isaac Greenwood, first Hollis professor of mathematics and natural philosophy in Harvard College, which appeared at Boston in 1729. It now transpires that one Juan Diez published at Mexico City in 1556 a "Sumario Compendiso," some twenty-four pages of which were devoted to arithmetic and algebra. Only four copies are known to survive.

The long sought spawning ground of the eel seems at last to be definitely located in the Atlantic Ocean southwest of Bermuda. New-hatched eels, only a third of an inch long, have been dredged here. When they have grown to the length of one inch they start on their long migration, which finally carries them into the rivers of Europe and North America. Young eels have been taken in mid-Atlantic at a depth of two and a half miles.

The Junior Audubon Society, at latest accounts, had 1,446,956 members.



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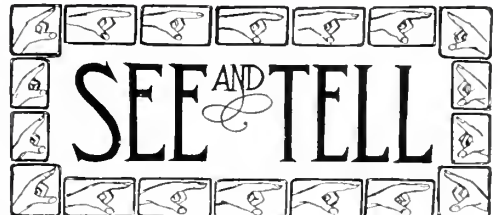
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"Ferns in the Woods."

BY CHARLES NEVERS HOLMES, NEWTON, MASSACHUSETTS.

Within a forest fen
 Afar from homes of men,
 Aloof from trodden way,
 Where people seldom stray,
 Within a lone retreat
 Where solitude is sweet,
 And birch trees gleam so white
 'Mid mingled shade and light,
 The visitor discerns
 A gorgeous growth of ferns.

Ferns that are dwarfed or tall,
 Ferns which are large or small,
 Fronds that are coarse or fine,
 Fronds of superb design,
 Some ferns which seek the light
 And some that shrink from sight,
 Which flourish in the shade
 Beside a sunny glade,
 Within a forest fen
 Afar from homes of men.

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The United States Post Office Department at Washington carefully investigated The Agassiz Association and because of its altruistic, educational and noncommercial purposes awarded a special low rate of postage to its official magazine.

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Internal Revenue Service

Hartford, Conn., April 13, 1921.

Office of the Collector, District of Connecticut.
Agassiz Association, Inc., Sound Beach, Conn.

SIRS:

With further reference to your letter of February 28th, 1921, you are advised that the Commissioner of Internal Revenue at Washington, D. C., has considered all facts as presented relative to the activities of your association and has decided that you are exempt from the filing of income tax returns under the provisions of the Revenue Act of 1918.

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The Appalachian Mountain Club, which is devoted both to natural history and to the outdoor life, now numbers 2,873 members, has a yearly income above \$20,000, and a reserve fund of nearly \$22,000. It maintains three permanent outing places, the largest of which cares for ninety persons at a time, and had last year a total attendance on its outings and excursions of 4,483. Among other benefits to the public, the club maintains 254 miles of mountain trails, at a yearly cost of eight dollars per mile. (Appalachian Mountain Club Bulletin, Feb., 1921, pp. 73-4.)

The tourmaline deposits of Mt. Mica, Maine, were discovered in 1820; but were not worked systematically until 1881. The best days of the quarry are probably now passed.

The old botanical magazine, "Plant World," is to continue publication hereafter as a quarterly under the title "Ecology."



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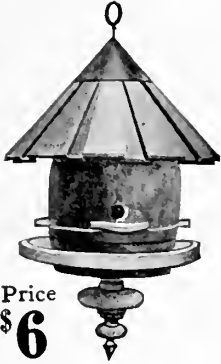
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At a dinner to Colonel Roosevelt after his return from South America some of the guests who had been in Colombia got to bragging about a gigantic tropical blackberry, a single fruit of which would fill a tumbler. Now comes Wilson Popenoe, explorer for the Office of Foreign Seed and Plant Introduction, and in "The Journal of Heredity" (Vol. XI, No. 5, pp. 195-203) proves that there really is such a plant.

The plant itself is not especially large—about as high as a man's shoulder, but its leaves are the size of a magazine page and as for the fruit, single berries are two and a half inches in length and decidedly broader in proportion than our blackberry.

And this is the wild form. What would it do under cultivation!

The State Ornithologist of Massachusetts is planning a two-volume book illustrated in color on the birds of the state, similar to the well-known work on the New York birds which appeared a few years ago.

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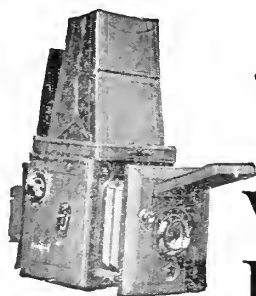
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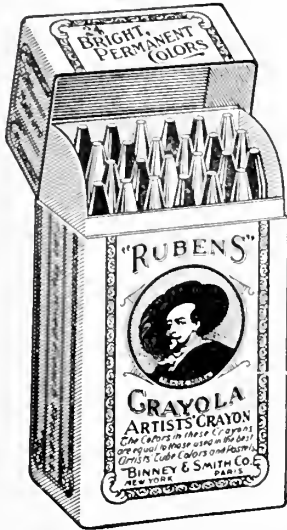
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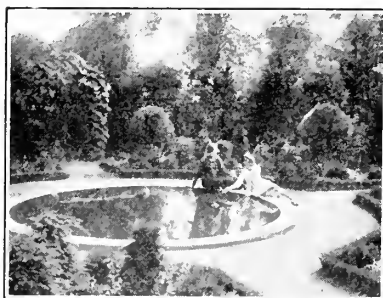
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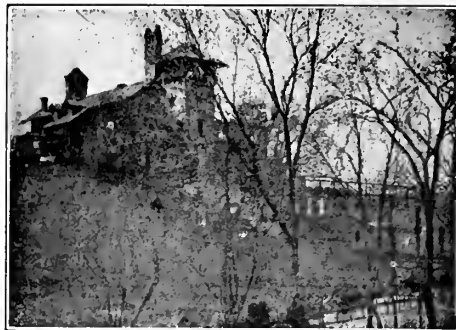
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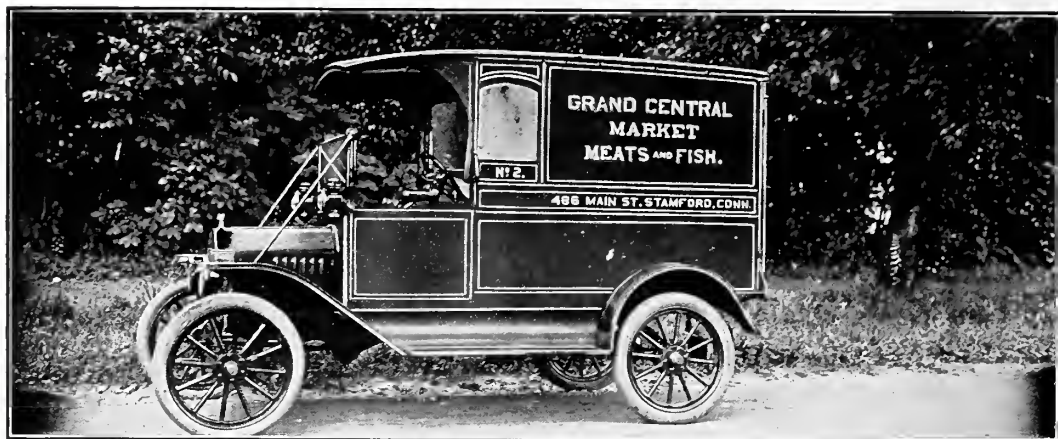
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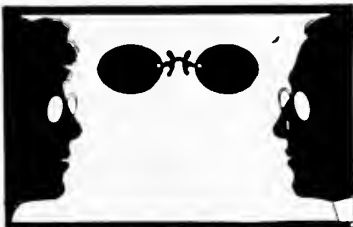
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Choosing the Right Kind of Pleasures.

In a very interesting talk by the Reverend William J. Long before the Kiwanis Club of Stamford, Connecticut, he quite rightly stated that the important question is how we choose our pleasures:

"You are busy men, meeting the problems of a rough and busy world; but under your skins you are every one of you natural men, and when the evening comes or the holiday comes you turn instinctively to pleasure, as other creatures do, or as flowers turn to the light; for play is in your blood, and in one form or another you must have it or become animated machines, unnatural, inhuman.

"Now I beg you to remember, for your boy's sake more than for your own, that what a man chooses for his pleasure is quite as important as what he chooses for his work. Indeed, from the viewpoint of philosophy (which is, as you know, the eternal viewpoint or an honest try for it) the selection of your pleasure is more important than the selection of your work. Most men and all boys who go wrong go in the direction of their false pleasures. You never heard of a man who took to drink or gambling or wife-beating or licentiousness because of the demands of his daily work; but you have heard of many, and know a few, who follow the primrose path of pleasure to a bad end. To choose the right pleasure is to increase your manhood and the joy of living manfully; to choose the wrong pleasure is to head for the "Dewey Club," or the jail or the reform school, or some other institution where we put those who don't know how to play.

"For this reason, largely, I am urging you to have one form of pleasure that takes you to the great outdoors. And take your boy with you. You can do more for him than the boy scouts; and there by the trout stream, or over the campfire where you have cooked dinner like two healthy and hungry boys together, he will take and remember the advice that passes over his head in home or school. The outdoor object may be birds or pictures or botany or fishing or nature study—what you will; so long as you are outdoors, away from the false gods of civilization, you are right and sane, yes, and are getting a

lot of good fun that you need quite as much as you need bread and meat. Any such pleasure is wholesome for the body, for muscles and appetite and restful sleep. It is wholesome also for the soul, for broad and kindly views of life, for courage and self-control, for silence and harmony and peace. One of the best things about this pleasure is that it grows on you and with you. You enjoy it as a boy; you enjoy it more and more as you grow old. The man who has an outdoor recreation always knows what to do with his day off or his week off; before the good day comes he is happy anticipating and preparing for it. I need not amplify. You who go fishing know well what I mean."

Let us say, for the benefit of our readers who are not local, that at the present time the chief topic in mind in Stamford is the Dewey Club, a gambling place that has been brought out into the limelight by the raid of bandits and the killing of a young man, generally regarded as respectable and much liked. It is claimed that it was his first visit to that notorious gambling place because of curiosity and time hanging heavily. He met his death because, soldierlike, he very bravely refused to hold up his hands and have his pockets searched by the raiders.

To return to Dr. Long's speech, which the local daily says was interrupted by prolonged applause, he argues quite rightly if we keep our pleasure in the great outdoors it is different.

We are sure that all who appreciate this magazine and the work of The Agassiz Association heartily agree with Dr. Long that the great need at the present time is what to do with pleasure whether it be the outcome of generally shorter hours of labor or of business depression which throws a great many people out of work. The problem is and always has been "things that Satan finds for idle hands to do."

The greatest of all earthly blessings is work, liking for it and the ability to do it. By that we mean not merely vocation but avocation. Keep busy at something. When the bread earning hours have been completed look forward with enthusiasm to taking up the pleasures of outdoors and the interests thereof. We are sure that every thoughtful per-

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son will agree with Dr. Long that no other class of avocation has been found to appeal to so wide a range of people. Everybody likes the back-to-nature movement in some form whether it be outdoor sports or outdoor thoughts.

Here is a corollary to all these. Well meaning citizens are much more ready to enthusiastically join in stamping out the bad than they are in promoting the good institutions. Everybody in this vicinity has quite rightly taken keen interest in all this episode of the Dewey Club but it looks as if the sacrifice of one of Stamford's young men would have some compensating features in that soldierlike he was led to give his life not realizing the good that would come to the community in general.

But on the other hand all good citizens should join enthusiastically in promoting institutions that raise life to a higher standard and give mentality as well as spirituality something definite to cling to and enlarge scope of activities. There never was a time when the ringing words of George Washington in his farewell address should be more carefully heeded:

"Promote, then, as an object of PRIMARY IMPORTANCE, institutions for the general diffusion of knowledge."



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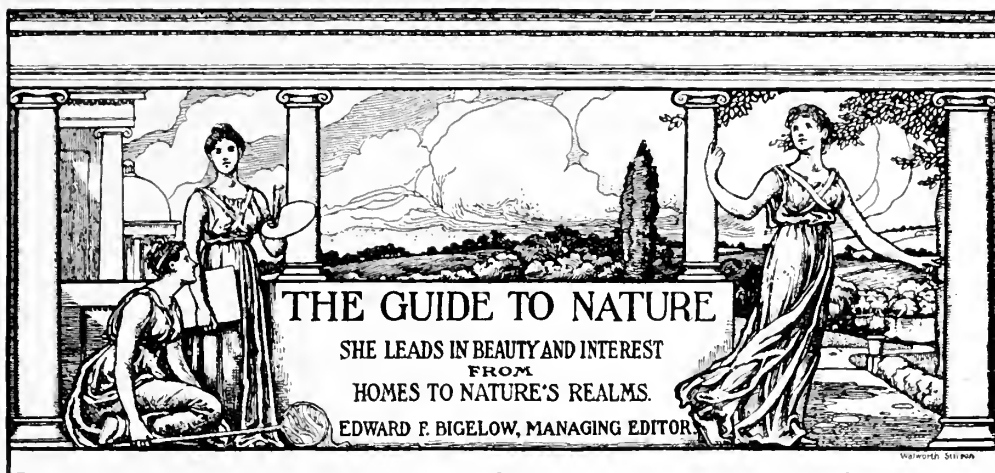
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Volume XIV.

OCTOBER, 1921

Number 5

ARCADIA AND THE BRUCE MUSEUM

The Importance of these Educational, Natural History Institutions, especially to the People of Greenwich, Stamford, and Their Vicinity.

By Edward F. Bigelow, ArcAdIA: Sound Beach, Connecticut.

THESE two educational institutions have been developed under my executive management, each under the direction of its efficient Board of Trustees. It is therefore especially fitting that I give the people of this part of Fairfield County, who can most readily make personal use of both institutions, a distinct and well marked understanding of what have been the ambitions and purposes in establishing these institutions, what has already been accomplished, what it is purposed to do in the future, and why I hope to obtain a large measure of local co-operation.

ArcAdIA, the older institution, is primarily for nature study, while the Bruce Museum, near the Greenwich railroad station, is primarily for exhibition of the objects of natural history, history and art that have been collected, studied or produced by other workers. Of course the museum also inspires study and quite naturally Ar-

cAdIA has on exhibition specimens that have been studied, but these minor products in no way change the main purposes of either institution.

And it should be noted further that the two are in no sense competitive. They are intended to be and are actively co-operative. In the schools we have been taught the verbal distinction—established originally, I believe, by Professor L. H. Bailey—that science considers chiefly the subject but nature study the pupil. A similar distinction exists between the two institutions in Fairfield County. The Bruce Museum points primarily at the things while ArcAdIA regards first of all the student and thinker.

ArcAdIA has been developed under the auspices of The Agassiz Association. This was organized in Lenox, Massachusetts, in 1875, and soon after was transferred to Pittsfield, thence in 1907 to Stamford, Connecticut, and in 1909 to Sound Beach. The six build-

ings of the old ArcAdiA were moved to the present location in 1911. Since then seven new buildings have been added.

On the front door of the office is a panel with the words, "Study Nature," quoted from the famous slogan of Louis Agassiz at his laboratory on the Island of Penikese in 1873. These two words reveal ArcAdiA's purpose—ArcAdiA, a place for the observer, the thinker, the inquirer. It is a place in which any organization may leave its workaday world in Stamford, in Greenwich, and in their vicinity, and assemble for education and recreation in nature. It is not a picnic ground. It will not be at the disposal of visitors who seek it only for that purpose. There must be the intent of serious communion with Mother Nature. A minimum amount of fun, frolic, sociability and good things to eat must be minor matters in order to secure the privileges of the place and the time of the managers. "Study Nature" here stands supreme. Those who come with serious intent will never be disappointed and will never be unwelcome.

Here on the part of every one, young or old, rich or poor, wise or otherwise they will find enthusiastic zeal for observation. The institution believes in the supremacy of the individual, each in his own favorite realm of seeing and telling.

The Agassiz Association is under the management of a Board of nine Trustees: Edward F. Bigelow, Ph. D., Sound Beach, Conn., President and Treasurer; Honorable Homer S. Cummings, Stamford, Conn., Secretary; Harlan H. Ballard—Originator, 1875, and President for thirty-two years—Pittsfield, Mass., Honorary Vice-President; Hiram E. Deats, Flemington, N. J., Business Adviser and Auditor; Dr. David Starr Jordan, Chancellor Leland Stanford Junior University, Calif., Dean of Council; Dr. Leland O. Howard, Chief of Bureau of Entomology, Washington, D. C., Naturalist Adviser; Reverend Charles Morris Addison, D. D., Cambridge, Mass.; George Sherrill, M. D., Stamford, Conn.; (Miss) Nellie P. Bigelow, Sound Beach, Conn., Secretary to the President and Assistant Editor of THE GUIDE TO NATURE. A circular giving full particulars of that incorporation will be mailed to any one upon application.

The Bruce Museum.

The Bruce Museum in the large stone building near the Greenwich railroad station was established August 4, 1908, by the late Robert M. Bruce. He gave his homestead and \$50,000 to the Town of Greenwich for "a natural history, historical and art museum for the use and benefit of the public, in such manner and under such rules as may be prescribed by the Selectmen of the Town and Trustees." The museum was to be developed by a Board of Trustees appointed in the Deed of Trust. The original Board of Trustees was as follows: E. C. Benedict, William J. Smith, Edmund C. Converse and W. H. Truesdale of Greenwich and Edwin L. Scofield of Stamford. This Board was succeeded on March 1, 1918, by the following: Frederick A. Hubbard, Walter M. Anderson, Wilbur S. Wright and Augustus I. Mead of Greenwich.

Part of the development, notably the construction of the gallery, was made by the original Board, under the executive management principally of the late William J. Smith. Apparently that Board was puzzled to know how to continue the work because in the first week of 1912 they inserted in the Greenwich papers a half page advertisement asking for information as to what was required and as to available donations of exhibits. I at once conferred with the Honorable Edwin L. Scofield and occasionally thereafter for over three years, receiving on November 23, 1915, definite request to go ahead and prepare plans. These were accepted at a joint meeting of the Board of Trustees and the Board of Selectmen on May 22, 1916, and published to the extent of three columns in local papers.

I devoted almost nine years to the development of the museum (from January, 1912, to October, 1920) without any money remuneration. Have since then received fifty dollars a month from the Town as Curator. The Town accepted the museum in the autumn of 1920. Its development has been and still is under the care of a Board of Trustees. The work continues at present under the combined auspices of the Board of Trustees and the Board of Selectmen (Oscar D. Tuthill, Harold W. Allen and John Broderick) of the Town of Greenwich. There is also an

Advisory Board representing the various educational interests of the Town: Fred A. Springer, Public Schools; Leonard Ochtman, Artists; Niel Morrow Ladd, Birds. In 1916 the late Honorable Edwin L. Scofield of Stamford, Chairman of the original Board of Trustees and writer of the Deed of Trust, requested me to develop the museum. That work I have done with the unanimous cooperation of the Board of Trustees. No one could have been more heartily sustained by any organization than I have been by the Board of Trustees. For that cooperation I am grateful.

The gifts and loans to the museum have been noted from time to time in the local publications, and a record has been made of the large number of visitors, not only local callers but those from all parts of the United States and from many foreign countries. The Bruce Museum is in a class by itself so far as it has been developed, and its development has been along the lines of praiseworthy endeavor. It has been our purpose that a museum in this community should be, so far as we could make it, the best in the world, and even now some things in it are not excelled by those in any other museum.

The exceedingly moderate amount appropriated by the Town is not nearly enough for the full development of the museum, nor for its adequate use as an educational institution. It is hoped that the Town will appropriate more and it is even more earnestly desired that public-spirited, philanthropic citizens of Greenwich may, in like manner, not be backward in coming forward.

ArcAdiA has also thus far achieved its great work with a limited amount of money. No other educational institution in the world has made the dollar go so far and accomplished so much as has The Agassiz Association in its forty-six years of existence.

Personally and on behalf of the excellent boards of management of both institutions, I point with pride to what has been achieved, not only in development but in work. I call attention hopefully to the enlarged scope of activities for the future and invite the fullest investigation of every detail pertaining to each institution. Both must advance to greater usefulness to the public for all time. They are for the public and

must be supported by the public. Having planned and watched every detail of the development of both, and having joyously noted the successes so far as it has been possible for them to go, I have unbounded faith in the greater possibilities for all time. Visit these institutions, work for them, not in the spirit of idle curiosity, not with the feeling that they belong to some one else, but that you have a vital responsibility to accomplish in cooperating to increase their usefulness.

Earnestly and faithfully yours,

EDWARD F. BIGELOW,

President of the Agassiz Association,

Sound Beach, Connecticut.

Curator of the Bruce Museum,

Greenwich, Conn.

Five New Instructive Exhibits at The Bruce Museum. 440 Visitors Register in August.

The curators are glad to announce that the interesting and instructive collection of North American, African, Australian, Indo-Pacific and South American shells are now classified, labelled and on exhibition at The Bruce Museum, Greenwich. This collection in the second floor hallway was donated by the United States National Museum at Washington and contains about eighteen hundred specimens. In packing and shipping the specimens many of the shells became misplaced and their scientific names on the labels were in great confusion. This necessitated the examination of the entire lot in order that the correct name be attached to each.

A three and a half foot iguana lizard has been placed on view temporarily in the mammal room on the first floor. This reptile, strange and terrifying in appearance, is common in South America and in the West Indies. It possesses a white flesh and is frequently used for food in the islands under the name of "mountain chicken." The assistant curator has tasted it in his native land and found it to be palatable and not unlike chicken.

Two giant sea turtles have also been put on view. These are remarkable for their beautiful shells and enormous hawklike bills. Another South American exhibit of interest is the huge nest of a social wasp. It is creamy white

in color, nearly four feet long and as hard as wood. It is made of pulp by the insects which carry the material in small bits to the nest. Thousands of wasps laboring together finally produced the big nest.

In the geological room on the third floor the commercial ores and ores of the precious metals are arranged with their products. Thus the crude ore of tin, for instance, is shown with many of the manufactured products produced from it. The crude ores from which silver, mercury, tin, lead, arsenic, cobalt, copper, sulphur, iron, etc., are made are shown together with some of their finished products. The work on this exhibit is now in progress.

In addition to this the geological department has been enriched by a collection of the common rocks that form the crust of the earth. These are fully labelled and are interesting.

In the bird hall an exhibition has been arranged showing the largest and the smallest eggs known and intermediate sizes. The smallest is that of a humming bird. The largest is one of an extinct species while in between are eggs of hawks, emu and ostrich. The largest is thousands of times greater in volume than that of the humming bird and it seems almost unbelievable that both were laid by species of the same order.

Attendance is increasing day by day and the collections are increasing in value, but the Museum is in urgent need of funds which, it is hoped, will be supplied at once. The work must be expanded, especially now that the school year has begun. Educational work of great value can be accomplished if support be given to the Museum's plans. Nothing strikes home so quickly in the mind of a child as graphic illustration, and no institution could be in a better position to teach by graphic methods than The Bruce Museum.

The Museum is a big advertisement for this part of Fairfield County, in addition to its educational possibilities, in that it is much talked of in many places.

People have come from New York and other places by train, motor and boat for the sole purpose of visiting the collections. They have told the curators and caretakers that the Museum is

unique in a number of ways. Curators of other museums have come here and expressed delight at the Bruce's methods and displays, and we are only four years old!

The town of Deerfield, Massachusetts, possesses a small museum containing only historical relics, but Deerfield is famous for that museum. Greenwich is an enormously rich and cultured town. Its people are known everywhere. No town could be more distinctly placed on the map of money, art and culture. Now it is becoming conspicuous on the map of science.

Water Eats Iron.

BY C. D. ROMIG, AUDENRIED, PA.

This article refers to water in anthracite coal mines. It is usually a clear amber color with a strong acid taste and not fit to drink. In some mines it is so strong that a constant dropping on a shovel from the roof of the mine will eat a hole through it in a single night or a few nights at the most. A saw will be ruined in a week or two if allowed to lie in this water. Iron or steel bolts are worn away like worm-eaten wood. In some cases iron pumps are useless and in this event it is necessary to substitute bronze, brass or other copper composition metal which may not be as strong but which resists the wear of the water better than iron.

A continual spray of this water on anthracite will in a day turn the coal into peacock or rainbow colors, after which it turns to bronze and then to a yellow which is the color of all ditches where this water flows. One peculiarity I often noted in a certain ditch where a wrought iron pipe lay exposed was that ordinarily the pipe was rusty, but when the mine water covered it the pipe assumed a rich purple color with a velvet finish which made it look like anything but iron.

As yet there is no special use for the water, which is usually called sulphur water.

Wild life sanctuaries in Pennsylvania alone now number twenty-four in size from 1,800 to 3,000 acres each. Plans now under way will, by the end of 1921, bring the number up to forty. The average cost of maintaining such tracts is a little less than \$1,200 a year.

TO KNOW THE STARRY HEAVENS

The Heavens in October.

By Professor Samuel G. Barton of the University of Pennsylvania.

ON the first day of the month there is a total eclipse of the sun. The eclipse is visible only in the southern parts of South America and on ocean areas. The total eclipse begins October 1, 5:27 A. M., Eastern Standard time, and the eclipse is last seen as a total eclipse at 9:44 A. M. The

one minute and fifty-two seconds as a total eclipse.

Of much greater interest to us is the total eclipse of the moon which occurs two weeks later on the evening of October 16. On this evening the moon passes through the shadow of the earth and is almost but not quite totally



Figure 1. The constellations at 9 P. M., October 1. (Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.)

eclipse is visible as a total eclipse over a strip of ocean about one hundred and seventy miles wide. This strip lies just south of Cape Horn and extends southward to the South Pole. Only a few uninhabited islands lie in it, so that no scientific observations of the eclipse will be made. The eclipse lasts at most

eclipsed. About a sixteenth of the moon's diameter will not lie within the shadow. The conditions of the eclipse are shown in Figure 2. The moon moving eastward first comes into contact with the earth's shadow in the position 1, the contact occurring on the northeastern part of the moon. This

contact occurs at 4:14 Eastern time. The middle of the eclipse occurs in position 2 at 5:54. This is the maximum eclipse. A little of the southern portion of the moon is still outside of the shadow. The last contact with the shadow occurs at position 3 at 7:34. The western side of the moon is the last to emerge from the shadow.

The entire moon will be distinctly

There will be no eclipse of the moon next year.

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The Planets.

There are no planets visible to the naked eye in the early evening. Some of the planets may be seen under unfavorable conditions before sunrise in the east. On October 25 Venus passes Jupiter. At this time the two brilliant

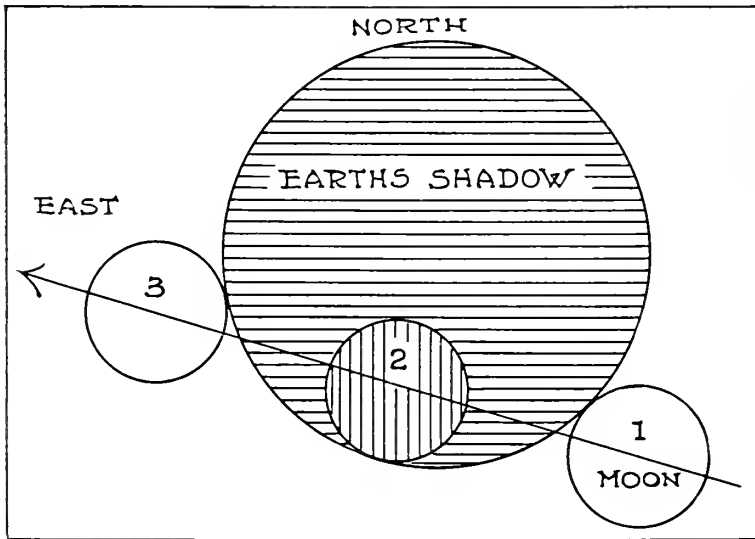


Figure 2. Eclipse of the moon October 16. 1 first contact 4:14 P. M.; 2 middle of eclipse 5:54; 3 last contact 7:34 Eastern Standard Time—an hour earlier in Central Time.

visible even when deeply immersed in the shadow. The earth's atmosphere bends a considerable portion of sunlight into what would otherwise be a black shadow. This light, which is of a reddish tinge, illuminates the moon.

The beginning of the eclipse will not be visible in the United States, as the moon has not risen when the eclipse begins. The time of moonrise varies with the position of the observer and the kind of time he uses. In the position of Philadelphia (five hours west longitude 40° north latitude) the moon rises at 5:17 P. M. The time at other places will not differ greatly from this. Only those on the eastern coast will see the maximum eclipse. Those farther west using Central time will find that the moon has risen from the middle of the eclipse and those still further west will see no eclipse at all, as the moon will not have risen until the eclipse is over. This will be true west of Denver.

planets will be quite close together. Saturn is near by and Mars also is near. These four planets, all of the planets visible to the naked eye, except Mercury, which is seldom visible, are then in the same constellation, Virgo. Unfortunately this interesting and unusual clustering of the planets is visible only in the morning twilight. The positions of the planets are shown in Figure 3.

Mercury may be seen very low in the southwest in the early evening twilight for a few evenings about October 7.

* * * * *

Uranus.

Until comparatively recent times the above mentioned five planets were the only ones known. They are the only ones plainly visible to the naked eye. These with the sun and moon made up seven moving bodies. One day of the week was dedicated to each, Sunday for the sun, Saturday for Saturn, etc.

Seven then became a sacred number representing completeness. It thus became a fixed idea that there were no more planets, and even after the invention of the telescope had made visible great numbers of stars which were not visible before few if any suggested that there might be planets which had not yet been seen.

On March 13, 1781, Herschel, while examining celestial objects with a seven-inch reflecting telescope, noted

within the lives of persons now living. Herschel himself called it "Georgium Sidus," that is, George's star, in honor of King George III. It was known by this name, or as "The Georgian," the English equivalent, as late as 1850. Others gave it a name harmonizing with the names of the other planets and called it Uranus, a name now in universal use.

The planet had been seen previously by several astronomers, but they had

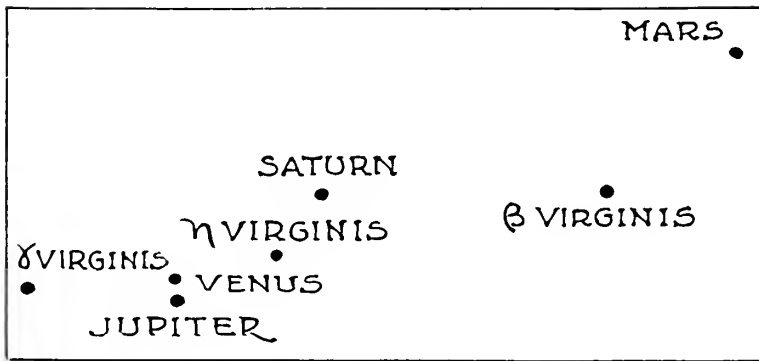


Figure 3. The positions of the planets October 25.

something peculiar about one of the stars which he saw. It looked somewhat different to him from the ordinary stars. It looked a little larger and less brilliant than a star. He turned a higher magnifying power on it and watched it. After two days he saw that it had moved a little. He announced that he had discovered a comet. Other astronomers received the information and they, too, noted the changes in the position of the object. These observations showed that the object did not move in parabola, or nearly in one, as comets do. The object was found to be moving in a circular orbit. This forced the conclusion that the object was really another planet. That there should be another comet was not surprising, but that there should be another planet was a thought entirely foreign to the minds of men at the time, even to those of astronomers and to that of the great astronomical discoverer, Herschel. The conclusion that the object was a planet did not come naturally at all.

Some, thinking to honor the discoverer, called the planet Herschel, a name used by some for a long time, even

not noticed any difference between the planet and other stars. It is most remarkable that Herschel noticed a difference, for astronomers found it difficult to see any difference when they had had their attention called to it. Probably few, if any, other astronomers looking through Herschel's telescope would have noted the peculiarities which aroused his suspicions of an unusual object.

The planet is now in Aquarius in the position marked on Figure 1. It is just a little too faint to be seen with the naked eye. Very little optical assistance is sufficient to show it. Its appearance in a small instrument is like that of stars. As it is just east of the faint star in Aquarius marked on the map, the planet should be easily found. There are no stars in the vicinity to confuse with it. There is a faint star a little southeast of the star on the map and quite close to it. A map of the fainter stars in this section will be printed next month.

* * * * *

The Comet.

Although it is not now visible here, it may interest the readers to know

that the brilliant object discovered near the sun on August 7 at the Lick Observatory was seen in the early morning west of the sun on August 9 at the Lowell Observatory. For some reason this fact was not announced until the end of the month. This proves that the object moved and was a comet. Its position would now be unfavorable for observations in the northern hemisphere.

America's Oldest Astronomical Observatory.

BY CHARLES NEVERS HOLMES, NEWTON, MASSACHUSETTS.

The oldest astronomical observatory in the United States is that which was erected at Williams College in 1838. In 1834 Professor Albert Hopkins sailed for Europe to obtain the necessary astronomical instruments, and when he returned in 1836 he and some of his students quarried the rock from which this primitive observatory was built. It was dedicated on June 12, 1838, and was of course named the "Hopkins Astronomical Observatory." It may well be called the pioneer observatory of America, although there was a small astronomical observatory constructed by the University of North Carolina, in 1826.

The Edges of the Universe.

Astronomers in years long gone by, as well as in our own times, contributed so much real and demonstrable knowledge to the sum of human information on that sublime science that it is well always to bear in mind the distinction between what has actually been discovered and proven, and that purely speculative astronomy which is all that may be applied in studying that vaster field of the universe of which our entire solar system as we know it is but a small component part. Still, even in the light of all that has been accomplished in astronomical research, there is something very like a challenge to ridicule in an outgiving from the American Astronomy Association's conference in Middletown, in this State, last week. If that outgiving is correctly reported in the press, we are informed that it takes light, traveling at the rate of 186,000 miles a second, a period of 1,000,000 years to travel from one edge of the universe to the other. It is a great pity, having shown how far the edges are apart, not to have thrown

some light on what those "edges" are—are they just plain stone walls, for example, and particularly, what is on the outside of them?—Editorial in "The Daily Advocate," Stamford, Connecticut, September 6, 1921.

* * * * *

COMMENT BY OUR PROFESSOR BARTON.

I was present at the meeting in Middletown. I did not hear the statement in question but it may have been made as stated. There is nothing whatever ridiculous in it. No doubt what makes it appear ridiculous is a misunderstanding on the part of the reader as to the meaning of the word universe. As commonly understood the word universe includes all created things and hence there is but one universe. In astronomy the word is used in a different sense and frequently used in the plural. Thus we speak of the spiral nebulae as island universes; that is, universes or systems separated from ours and other universes. The statement quoted was merely a statement in regard to the dimensions of our universe and does not imply that all created things lie within those distances.—Samuel G. Barton, University of Pennsylvania.

A Friendly Chipmunk.

BY F. H. SIDNEY, WAKEFIELD, MASS.

Mr. Frank P. Busiel, First Vice-President of the New England Association of Railroad Veterans, who lives at East Andover, New Hampshire, is fond of animals. He and a little chipmunk living in a stone wall near Mr. Busiel's home are on friendly terms, the chipmunk often climbing on Mr. Busiel's shoulder and there eating corn from his hand. After filling the pouch with corn the chipmunk will skip away, hide the corn in his cache and return for another load.

A single quart of sea water may contain more than a hundred times as many living creatures as there are stars visible to the eye on the clearest night.

The perennial question, "How does a bird soar?" continues to occupy the attention of Mr. John Burroughs and several other contributors to the "Atlantic." As usual, there is no agreement as to the facts, and no reasonable theory. And yet the problem appears simple enough!

CORRESPONDENCE AND INFORMATION

A Trout That Ate Mice.

Sundown Hill, Riverside, Connecticut.
To the Editor:

I send you the photograph of a large brook trout and the contents of his stomach when taken—nine field mice. The trout was caught by my friend, J. E. Barbour, of Paterson, New Jersey, in the St. John's River, Gaspé, Canada, June 20, 1921. He also took the photograph.

The St. John is one of a number of

with spruce and balsam, rising from the water's edge. Coming down the side of one of these cliffs, an immense bald rock, is a considerable waterfall, and probably there are others which I did not see. It is probable that the mice gorged by the trout had been washed down the side of one of these cliffs by a shower. Once in the St. John the current might carry them miles before they could make a landing.

I happen to know that mice are good



THE TROUT AND THE MICE TAKEN FROM ITS STOMACH.

rivers that flow out of the Gaspé peninsula into the Bay of Chaleurs. It comes down out of the high country with a steady, unbroken rush. It is a long water hill. You go up it very slowly creeping along the shore with two husky guides in each canoe shoving against the bottom with steel shod poles; coming down it is like a running horse under you. There are steep cliff sides, some of them beautifully wooded

swimmers. I remember catching a number of deer mice in a wire trap at a camp in the woods. I took them out in the canoe to drown them, but losing the heart to do it, I let them out near shore. They swam well and going through the margin of lily pads one of them was captured with a great splash, probably by a bullfrog.

IRVING BACHELLER.

The Psychology of Killing.

New Haven, Conn.

To the Editor:

On page XIII of the August number of *THE GUIDE TO NATURE*, you quote from an article by Robert M. Gay in "The Atlantic Monthly," the idea suggested being no doubt uplifting, but where does Mr. Gay get off in his argument as applied to the average person who has occasion to know a "barnyard rooster."

I believe I am correct in stating that barnyard fowl are usually grown for revenue which means the ultimate killing of the birds. Can one kill, or permit to be killed, a creature that he truly loves?

With kindest regards,

ERNEST FRANCIS COE.

[FROM PERSONAL LETTER IN REPLY.]

In your interesting letter, which I received while I was in camp, you raise a suggestive question. Personally I am of the opinion that the love that one applies to natural objects is not at all inconsistent with killing. Theoretically, from your point of view, we should love the rose and never pick it from the bush, but I think that those who gather the most roses love them the most. You may recall my article about the sportsmen being the best lovers of our wild birds. I formerly thought that those who prattled sentiment and gush about the lovely birds were the real bird lovers. Now I think that the sportsmen who actually propagate and protect the birds at certain times of the year are true lovers. I also am disposed to think that the one who loves roosters and hens the most, and cultivates them as a business, is the one who most frequently kills them. The person who has no liking for a rooster would never feed it, and even if he does kill it after a long period of feeding his real love for the rooster is, I believe, none the less. I admire the look of pride and love on the faces of the exhibitors of fine stock at the poultry show.

Some of the most ardent lovers of Belgian hares whom I have ever known use them as food for the family. They play with the animal during its life and then kill it painlessly.

But psychology is an uncertain "ology." Here in Stamford certain persons steal trees from Dr. Morris's beau-

tiful estate to celebrate the birth of Christ. Several years ago at a meeting of the newspaper editors of Connecticut we compared notes, and found that the Baptist clergyman that published a religious paper was more grossly and frequently cheated than any of us. Isn't this a queer world and isn't psychology one of the queerest things in it?

I am wondering, to revert to the original question, if any one really did love a rooster and not kill it; that is, have not all the chicken lovers gone into the chicken business? Many persons visit ArcAdiA and fall into ecstasies about the loveliness of the study of nature. Those who really love nature do not indulge in so much fizz and froth but devote themselves to the study; even misfortune and a whack on the head can not keep them out of it.—Edward F. Bigelow.

FROM A LATER LETTER FROM MR. COE.

I am extremely interested in your expression of opinion as to the relation between love and killing, and I consider that you have worked out your argument very clearly. "Pride and love" are not, I believe, necessarily handmaidens. To me the word "love" is the most subtle word in the world. Most of us have tucked away in our heart a very personal definition of what it means. Perhaps it is just as well to detach the word "love," anyway, from consideration in relation to our ordinary, commonplace activities to which we are habituated. Otherwise, practically all of us will be obliged to own up to inconsistency of action, compared with our highest ideals. Gush is cheap. "Fizz, froth and enthusiasm" are mere bubbles. You certainly have an opportunity to detect the real from the pseudo right at ArcAdiA.—Ernest Francis Coe.

Mr. Ernest F. Coe has retired from the Elm City Nursery Company and will devote his entire time in the future to landscape work. His office is 951 Forest Road, New Haven, Connecticut. We cordially recommend Mr. Coe as a good landscape architect and all-round naturalist and, even more emphatically, as a royal good fellow.

The American Association for the Advancement of Science has now slightly more than ten thousand members.

The Vibrating Spider and Her Web.

Springdale, Connecticut.

To the Editor:

You may recall that a year or so ago my boy found a big, gold bedecked spider in the garden, and that you gave him the creature's name, sex, habits, etc. The other day I found another specimen, and for an hour watched her performance on the slack rope. Above her web were stretched two cables each about five feet long. She was perched on the middle of one and from her body to the upper hawser was a short section of web. By pulling the latter she managed to swing back and forth for a distance of about six inches. She kept doing this actively until I was tired of watching her. Now why all this exertion? Was she out to get the air? Was it simply a vagary or was the exercise to assist digestion of a fly feast that she had just enjoyed, or do you give it up as I do? Not very important perhaps but Fabre would have worked six months to solve the riddle.

AMBROSE H. HORTON.

From a second letter about a week later:

I have it; the whole performance was a coquettish lure for the unfortunate mate who after a brief honeymoon was destined to be gobbled up by his too ardently affectionate spouse. I didn't witness the tragedy but saw the corpus—what there was left of it.

Sprouts of Pitch Pine.

West Newton, Massachusetts.

To the Editor:

On page 31 of the August issue Mr. William H. Huse states that the pitch pine, *Pinus rigida*, "is remarkable because of its ability to send up sprouts from its stumps." I should like to inquire if Mr. Huse has seen these shoots acquire any larger size—in other words, if they produce saplings.

I have a wood lot of some twenty acres of pitch pines at Centerville, on Cape Cod, and have made a study of this pine, but I find that shoots will often start from newly cut trees, yet these are abnormal in regard to the leaves, which are not in groups of three, as is usual, but are single, as are the young of all pines that I have seen in their first year. The new shoots of stumps that I have observed soon die,

seldom if ever surviving over the first winter.

It would seem that the young pines when in extreme youth assume an ancestral method of leaf growth, and it is interesting to note that the trees when in a weakened, pathological condition also revert to the same primitive method of leaf production.

C. J. MAYNARD.

An Astonishing Experiment and Statement.

BY F. H. SIDNEY, WAKEFIELD, MASS.

Crickets are very fond of their homes, and prefer to stay near where they were born. If a cricket is carried away it will use its wings to fly back.

I have taken crickets from my garden, pasted a small bit of paper on their backs to identify them, then carried them five miles away in an automobile and turned them loose. The very next day I found the marked crickets in their accustomed place in my garden.

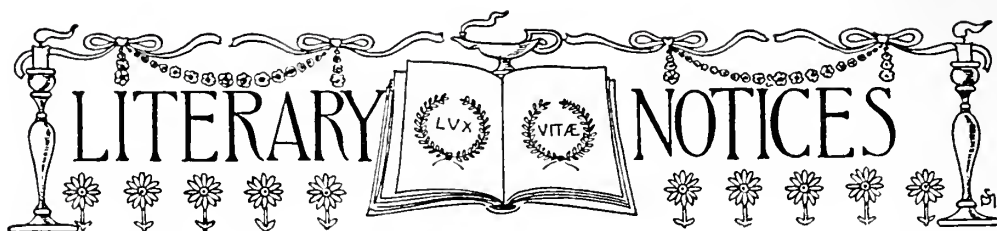
People in Spain are very fond of the cricket's song, and they keep crickets in tiny cages in order to hear their cheery song. Only one cricket is kept in a cage, for two crickets shut up together will fight until one is dead, for crickets always live alone. Spanish children fish for crickets by tying an ant to a thread and dropping it into the cricket's hole. The cricket fastens on to the ant and is pulled up like a fish.

COMMENT BY DR. LUTZ.

This observation is rather unusual. Very few of the crickets that I would expect to occur in Massachusetts have wings sufficiently developed to enable them to fly five feet, much less five miles. In every generation, however, there are a few individuals that have long wings and can fly but I would not expect them to fly five miles in any length of time, much less in one evening, and still less back to the exact place from which they started.

On the other hand, insects are wonderful things and we are always finding out new wonders. The crickets that can fly do fly and are frequently attracted to lights; also the male crickets use their front wings to chirp with.—Frank E. Lutz, Curator, Department of Entomology of the American Museum of Natural History, New York City.

Will other readers please experiment on this?—Ed.



LITERARY NOTICES

AMEBROID MOVEMENT. By Asa A. Schaeffer, Ph. D. Princeton, New Jersey: Princeton University Press.

The author has two objects in presenting this account of his investigations of ameboid movement. The first is to offer the latest material on the subject in a convenient form for the student of medicine, the psychologist, the physiologist, the evolutionist and the general biologist. The second is to present the thesis, that moving organisms in which orienting organs are absent or not functioning always move in orderly paths; that is, in helical or true spiral paths.

THE BOOK OF NATURE STORIES. By H. Wadingham Seers. New York City: Dodd, Mead and Company.

Each one of these stories has been chosen with a definite aim, either because it is the life story of some very familiar plant or animal, or because it has been found by the author to be peculiarly attractive to the child mind, or because it offers a simple introduction to the great truths of evolution. The author's language is simple and direct and the mistake is not made of representing the subjects as too human. Every child lucky enough to get a copy of the book will be introduced to a world full of romance, wonder and delight.

EINSTEIN'S THEORIES OF RELATIVITY AND GRAVITATION. A Selection of Material from the Essays Submitted in the Competition for the Eugene Higgins Prize of \$5,000. Compiled and Edited and Introductory Matter Supplied by J. Malcolm Bird. New York City: Scientific American Publishing Company.

A broad background of scientific knowledge and of scientific habit of thought is needed to prepare the mind of the layman to comprehend the Einstein theory of relativity. To prepare this background is the aim of this book which is the outcome of a five thousand dollar prize placed in the hands of the "Scientific American" for securing within three thousand words the best popular explanation of the theory.

Many contributions were received. These have been examined and selected with care. The book contains excerpts from many of the essays, and the winning one, by Lyndon Bolton, British Patent Office, London, and several others in full. The value of the book is increased by the great skill and care with which the compiler has explained the contest and its conduct and the reason for what at first glance seems an extraordinary arrangement of the resultant material. The work has been so carefully done that

the result from the beginning to the end of the three hundred and forty-five pages should be welcomed as popular reading.

MORE HUNTING WASPS. By J. Henri Fabre. New York City: Dodd, Mead & Company.

In October, 1915, Henri Fabre passed away quietly at the advanced age of ninety-two, at his modest home in the south of France. For the last twenty years he had been able to devote his entire time to the dearest wish of his life—the uninterrupted study of his little insects.

His life work is embodied in "Souvenirs Entomologique," comprised in ten volumes, of which this is one. The publication of these volumes brought to the aged philosopher a world-wide fame and an especial recognition and veneration from his native France.

His praises come from all sources. Darwin, long years ago, referred to him as "a savant who thinks like a philosopher and writes like a poet." In the preface to the English edition of his works, Maeterlinck calls him "The Insects' Homer" and accords him the distinction of having inspired his own masterpiece, "The Life of the Bee."

FIELD BOOK OF INSECTS. By Frank E. Lutz, Ph. D. New York City and London: G. P. Putnam's Sons.

Members and friends of The Agassiz Association will be especially interested in this book, since the author, in his preface, says that he had us in mind when preparing it. We are grateful for this thoughtfulness, and take pleasure in especially recommending the work to our observers. Dr. Lutz is well-known to our readers because he is one of the technical entomologists that have sympathetic regard for the amateur and the novice. He has prepared his book for such observers. He says the title might justly be "Answers to Common Questions about Insects." He has had many of these common questions from this office. We are glad that he has so thoroughly and faithfully worked out a manual that is convenient in size, yet extended and complete in contents.

The book also contains hints concerning collecting, breeding, preserving and classifying insects, giving "catch characters," rather than lengthy descriptions, by which commonly observed insects, and insects which would repay observation, may be recognized; it outlines interesting or economically important life histories, and it offers an untechnical but scientifically accurate text.



Death of a Sustaining Member.

It is with personal grief and genuine sympathy to the members of his family that we announce the death of Merwin Porter Snell, Ph. D., of Sound Beach, Connecticut, on Friday, September 23.

The Agassiz Association regarded Dr. Snell as one of its most appreciative and loyal members. His hearty personal interest and financial cooperation began when ARCADIA became a Sound Beach institution in 1909.

He never became a "has been" in nature study. He was enthusiastically interested in animal and plant life, and his conversation showed especial thoughtfulness with reference to God's works.

He was not only keenly interested in science but in religion and theology. He was a devoted member of the Roman Catholic Church and always able to give a reason for the hope that was in him. He was thoroughly informed not only in the history of his own church but in that of all others. In many of the comparatively modern beliefs he could undoubtedly have responded to a catechism better than some who maintain those beliefs. He wanted to be technically informed whether it was a matter of church history or of some plant he found growing by the wayside.

He was a frequent visitor at ARCADIA and often introduced his call with, "What is this? I found it near my home." After the specimen was identified and explained he would lead on to other things, showing a wide-awake interest in everything he read or observed. He surely met the conditions of AA membership in the practice of our slogan, "See, think and tell." He was an omnivorous seeker for knowledge and a lover of humanity in dispensing it.

"The Daily Advocate" of Stamford says of him:

"Dr. Merwin Porter Snell, who died at the Stamford Hospital yesterday,

had been a resident of Sound Beach for fifteen years. He came here from St. Louis, where he had lived for many years. Dr. Snell received his Doctor of Philosophy degree at the Albertus Magnus Catholic University, Kansas City. He was afterwards connected with the Catholic University at Washington, and at one time was in another college in Arkansas. He spent most of his life writing on philosophical subjects. Dr. Snell is survived by his mother, Mrs. Mary C. Snell; his wife, Mrs. Minnie L. Snell; two children, Misses Margaret and Priscilla; four brothers, Theodore T., Charles L., William A. and Clarence E.; and two sisters, Miss Cora L. Snell and Mrs. Joseph M. Long. Dr. Snell was fifty-eight years old. The funeral service will be held on Monday morning, in St. Catherine's Church, Riverside. Interment will be in Woodland Cemetery, Stamford."

The Work of The Agassiz Association.

Dr. David Starr Jordan, Chancellor Leland Stanford Junior University, Stanford University, California, writes to Dr. Bigelow on September 3, 1921, telling of his hearty interest in the work of The Agassiz Association and his desire that it may be properly financed. "Dear Mr. Bigelow:

"I have been for many years interested in your work and in that of The Agassiz Association under your direction. I remember once when Professor Agassiz, my teacher, came before the Legislature at Boston. One man said that he did not know much about the value of Agassiz's studies but he for one was not willing to stand by and see so brave a man struggle without aid. I have had the same feeling in regard to you.

"Your work is one greatly in need in our country. The study of nature is the best remedy for many of the dangers into which the nations of the world are falling: greed, glory, and fight—

three abominations which the love of birds and flowers may help to dispel. I trust that friends of nature study may make it possible to endow the institution so fully that it may become a permanent feature in the educational work of the nation. It will help new Agassizs and new Bigelows to arise when they are needed.

"I may say that one of the efficient professors in Stanford University, Edwin Chapin Starks, was first drawn to biological study through The Agassiz Association, and that his first acquaintance with me came from my answer to a question which he had sent to you.

"I remember with great pleasure my visit to Sound Beach in 1912. I was strongly impressed with the field of work and I have always maintained the importance both moral and mental of an education which brings young people into contact with actual facts, things which they see for themselves and which come to them with a force beyond that of any tradition or conventional belief.

"Sincerely yours,

"(Signed) DAVID STARR JORDAN."

Contributions.

Left in Office by Unknown Contributor	\$10.00
Mr. Thomas W. King, Sound Beach	10.00
Miss Carrie M. Jacobs, Hamilton, Ohio50
Nature Lover	100.00
"Explorer in God's Country"	25.00
Mrs. Helen Root Adams and daughters	5.00
Hearty Assistant, Sound Beach	20.00
Southern Botanist	5.00

Miscellaneous Contributions.

Mrs. Allan F. Kitchel, Sound Beach: Worm of the genus *Mermis sensu lato*.
Misses Barbara and Elvora Kitchel, Sound Beach: Dragon fly.

Mr. Philip O. Gravelle, South Orange, N. J.: Set of forty-three stereopticon slides.

Mr. H. E. Deats, Flemington, N. J.: Key tags.

Master George Santy, Sound Beach: Twin squashes.

Mr. Ellis B. Noyes, Portsmouth, Va.: Card index of references to illustrations of grasses in pamphlets previously contributed.

Miss Margaret D. Jefferson, Brooklyn, N. Y.: Bird's nest.

Thomas A. Edison, Inc., Orange, N. J.: Another liberal supply of records for the Edison Diamond Disc Phonograph presented to The Agassiz Association by Thomas A. Edison in 1916.

Dr. Francis Rolt-Wheeler, Bee Tree P. O., North Carolina: Chambers of the nest of a mud dauber wasp containing larva and pupa and food supply of spiders.

Mrs. Mary V. Crandall, Sound Beach: Caterpillar of *Papilio turnus* butterfly.

Master Stanley Potter, Sound Beach: Pipefish (*Syngnathus fuscum*).

Mrs. Newton, Sound Beach: Walking stick insect; limonite geode and remarkably good specimen of serpulid on a quahog shell.

The New York, New Haven and Hartford Railroad Company has recently contributed another supply of old plank from discarded railroad platforms. These will be used for the foundations of new walks in Nymphalia, our nature study park.

White Herons at Bridgeport Seaside.

Our good friend, I. Foster Moore, of Bridgeport, Connecticut, sends us a clipping from the "Bridgeport Post" in reference to five American egrets that have been feeding on the flats where hundreds of people pass each day. The birds seem to realize that they are protected, and are affording good opportunities for observing them. The egret, as almost everybody knows, has been hunted for its beautiful plumes but the Federal Migratory Treaty Act now gives the birds protection over all the United States. The only time that they are hunted in Connecticut is when Game Warden Wilbur F. Smith gets after them with his camera. The paper referred to speaks of this and of Mr. Smith's impression that the Bridgeport Park System cooperates heartily in protecting the birds.



What ArcAdiA is For.

"Bigelow, the trouble with you and your ArcAdiA is that you never get anywhere. You mean right and you work hard but, hang it all, the thing isn't practical. You don't, for example, tell anybody how to raise more corn to the acre, but advise them to look at the stars at night. Let me tell you that is all bosh. This is a practical age. You want to get right down to hard tacks and do something worth while with your talent and hard work. I read your article in 'The Advocate' but I do not see that you said a single word about what ArcAdiA is really for. Why, hang it, man, you don't land anybody anywhere. You are up in the air like the stars."

So said a prominent and successful professional man who met me on the sidewalk one morning recently. He was smiling and emphasized his remarks by sundry slaps on my shoulder and a twinkle in the eye and a smile that told me he didn't believe a word that he was speaking. He was trying to give paternal advice to a young man. Such conduct was so unusual, the experience was so novel to him, that he suddenly discovered that he was joking, and ran away.

I took the trolley car to Sound Beach. On it I met a prominent man with genial manner, a man who is generally supposed from his occupation to glory in the supremacy of mind over matter. Today he was more material than mental.

"Well," he said, "I suppose you, like the rest of us, find it hard to get along nowadays. Business does seem to be having a pretty hard pull." I smiled encouragingly as if I thought that the only purpose in life is to keep on pulling.

"I suppose," he continued, "that you know better than I do what you are

driving at, but let me give you a few pointers. I was reminded of them by those Scheeper's gardens. I am told they make a lot of money selling raspberry plants and such things. It occurred to me that you are well placed for that kind of business. You could get rich if you would join in and tell people how to raise things. I wouldn't, if I were in your place, be fussing about the beauty of butterflies, but I would tell folks how to get rid of garden pests, what is the best way to raise this, that and the other thing; how to take care of a cold frame, and oh, well, you know, all things along that line. People really want to know nowadays."

He then began his second chapter of advice, but I interrupted, "What do they want to know and why do they want to know it?"

"There you go again. I know what you want me to say. You want people to study weeds and bugs, not how to raise crops. I don't see any use in such swosh. Tear up the weeds. Do something downright practical. I read your magazine but I don't see anything in it that tells me how to do things unless it is to watch a bullfrog jump." Then like a horse that breaks into a gallop he burst into laughter.

Arrived at ArcAdiA I was looking over the mail when two visitors, women, were announced. I was delighted to meet them. They were smiling, pleasing in appearance, well gowned and vivacious. Almost simultaneously they started but at the beginning one got the inside track, and pranced like this:

"So you are Mr. Bigelow? Delighted to meet you. Heard a good deal about you and your wonderful work here. Lived down on the shore all summer. Been up here a lot of times. Didn't know till the other day there was such a place as ArcAdiA. A lady told me I

ought to come up and see the funniest place she ever saw. She didn't know what it was all about, but very interesting. At any rate you have a beautiful grove and lots of bees and things. So will you please show me around? Tell me what it is all about, what you are doing. So sorry I didn't know about it before. I am just going back to the city. Wish we had got acquainted months ago. I know you live an ideal life. I would like to know how you get so much enjoyment out of your work. There isn't anything I love better in all the world than nature. I just adore it. I have been interested in it all my life" . . .

I ventured meekly to inquire how it was that with her intense interest in nature she had never heard of our little natural history institution. She explained that although she had been through ArcAdiA Road many a time (on her way to the golf links, I inferred) she had never noticed the buildings nor the trees until that woman told her about them.

I will not take the space nor the time to continue an account of this entertaining monologue, nor cite instances of other people who have just heard of ArcAdiA and want to know what we are doing.

What is ArcAdiA for? The trouble is in the "for." The mind that thinks only in terms of utility will not find in the dictionary a definition of that word "for." Such a mind will give it up as hopeless. But by those who believe that life, this life, the life that we are living here and now, is worth living in all its heavenly possibilities, in all the heights of spiritual aspirations as an end in themselves regardless of any reward that may come in the future, then by such persons ArcAdiA is rightly understood.

It is for those who believe that life is more than corn crops and "punkins" and raspberry vines, that the development of a human being, who shall go through life looking at God's work by the wayside, is worth more than to rush onward intent only on social or any other little circle of ideas. We believe in broad, sympathetic interests. The study of nature does not forbid the pursuit of corn crops nor the training of "punkin" vines, nor the sight of the stars: does not look exclusively at the

money that comes from garden products, but knows that the best crop of the garden does not come out of the garden. The fun of doing it is worth more than eating the products.

What is ArcAdiA for? For? To prevent us from rushing over the road of life, not merely for a few months but for threescore years and ten or more; to help us to see some of the things by the wayside. For? To help us to live, to help us to die, to help us to help the other fellow when we find him stumbling along the road. For? I wonder what.

The greater part of life must be workaday, must be utilitarian, but as we journey along the road let us take time to live. It is a delight to be social but at the best or the worst life must be lived alone. It is well to be called the brightest, the best looking or the best dressed member of a social group, but it is better to have resources in one's self, to see and to think and to live with the best company in all the world, one's own cultured, intelligent self. What is ArcAdiA for? ArcAdiA is to teach and to help us to realize that life is worth living, and worthless unless we know how to live. It tries to take people out of a circumscribed shell or a little rut in their own round of eternal utility, to broaden them, to make them more charitable, to incite in them a kindly feeling for the other fellow, to look above and to gain inspiration from looking up; to be pure, to render a helping hand. ArcAdiA is to solve the problems of the present time which are all out of human selfishness. The great war, Bolshevism, the struggle of capital with labor, the increasing power of money and the greater difficulties of making a living are all the outcome of tangled selfishnesses coupled with an idea that money is the whole thing, or that to raise more corn is the sole object of life.

We are carrying on work at this institution not with the intention to show the entertaining things of nature, but the nature that transmutes itself into a broader and better human life. We believe that the lovely, the pure, the beautiful are worth while in themselves. These are what the visitor will find at ArcAdiA.

What is ArcAdiA for?

For you.

EPWORTHIAN AT ARCADIA.

Visit to Nymphalia, Nature Talk and Picnic.

The Epworth League of the Methodist Church had one of its most enjoyable outings Saturday afternoon, this being at ArcAdiA, where the young people were royally entertained by Dr. Edward F. Bigelow and his daughters. Once more the rain threatened to spoil all the carefully laid plans of the Leaguers, but twenty-six of them were determined to have a good time, in spite of the weather, and they were richly rewarded for their perseverance. Included in the company were a number of members of the Waterside Epworth League, and a fine opportunity was given for two chapters to become more intimately acquainted.

During the afternoon Dr. Bigelow gave the young people a trip through the buildings of Little Japan, then over board walks through Nymphalia, and on to the Observatory and the Apiary. At supper time, tables were spread on the outdoor platform, under the trees, and, in addition to their own lunches, the Leaguers were privileged to sample some of the delicious product of the Apiary, and were also provided with quantities of grapes from the ArcAdiA vines.

Immediately after supper, the monthly business meeting of the League was held in Welcome Reception Room, the president, Harold Searles, presiding, after which Dr. Bigelow entertained the company with a nature talk, illustrated with beautiful stereopticon slides and microscopic projections. The party broke up with songs and cheers for Dr. Bigelow and ArcAdiA, and the Leaguers arrived in Stamford at about eleven.—The Stamford Advocate.

Girl Scouts of Glenbrook.

Eighteen Glenbrook Girl Scouts with their captain, Mrs. E. L. Prescott, spent a most delightful afternoon and evening in ArcAdiA last Saturday as guests of Dr. Edward F. Bigelow. Arriving a little before four o'clock, the party was greeted by Dr. Bigelow at the entrance to Little Japan.

After depositing lunch boxes and wraps in their proper places, the purpose of each building in the group was explained, calling especial attention to

the torii under which one must pass to enter the Rest Cottage, which is tastefully decorated with Japanese screens, parasols and vases of flowers for which exquisite taste the Japanese are noted.

The girls were all interested in wonderful mirrors which are used for photographic purposes showing one exactly as you are from every side—six pictures at one time. These mirrors are in the newest building, the Annex, which has just been completed and accommodates larger overnight parties than heretofore.

The six hour program is most interesting. First a walk through the winding paths of the natural park, stopping here and there to rest and learn from nature itself. This park is called Nymphalia because it is the home of Nymphs of nature study.

The Apiary was most interesting but warnings were given to be a bit careful as the bees are especially savage at this time of the year, when they have their big summer's gathering of honey to protect.

Supper was cooked at the grills and served at the tables on the Pavilion, and after being cleared away there was a Scout sing in the Rest Cottage.

At dark the wonders of the telescope in the Observatory and a lecture with lantern and microscopical slides brought to a close the most interesting time. Hearty thanks were extended to Dr. Bigelow for his kindness.—Glenbrook Correspondent of "The Stamford Advocate."

These are busy times in ArcAdiA. Visitors have had appointments as frequently as we could attend to them. The regular six hours' program is a novelty in the entertainment of young people. Where else in the world can be found any other program of six hours in length which the young people have several times requested be extended to eight? Where can such a program be found that will hold their interest unabated to the end, and beyond?

ArcAdiA is a busy place, and it is so beautiful and interesting, especially at this time of the year, that we are sparing no pains to use it as advantageously as possible.



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In addition to the attention necessarily given to visitors the pressure on the office has been stronger than ever before. Innumerable specimens, inquiries by telephone or by letter have come in. That telephone bell has for days been ringing incessantly.

The grape arbors are heavily laden. Even in an off year several bushels of grapes are produced. When the sixty new vines set out last spring come into bearing, something will be doing in grapes and we are not interested in wine making either. Our visiting friends are treated liberally to grapes and honey.

The Apiary has required much time, owing to the extensive increase of materials supplied last spring by The A. I. Root Company, Medina, Ohio. The number of hives is now twenty-one. With the exception of perhaps two or three every colony is strong and active. The warm weather of September has afforded a favorable opportunity for gathering goldenrod nectar.



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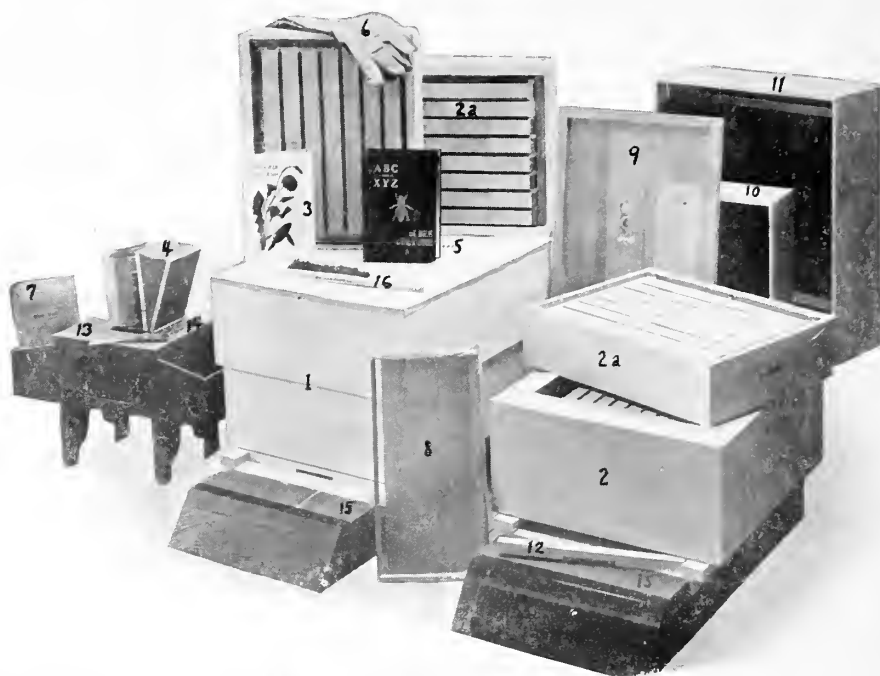
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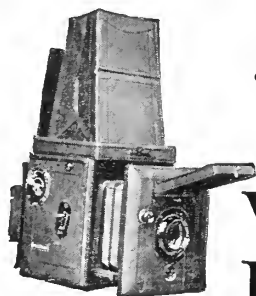
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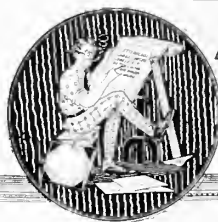
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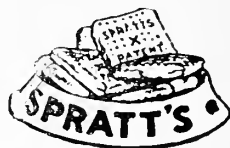
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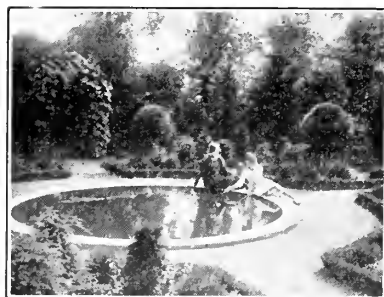
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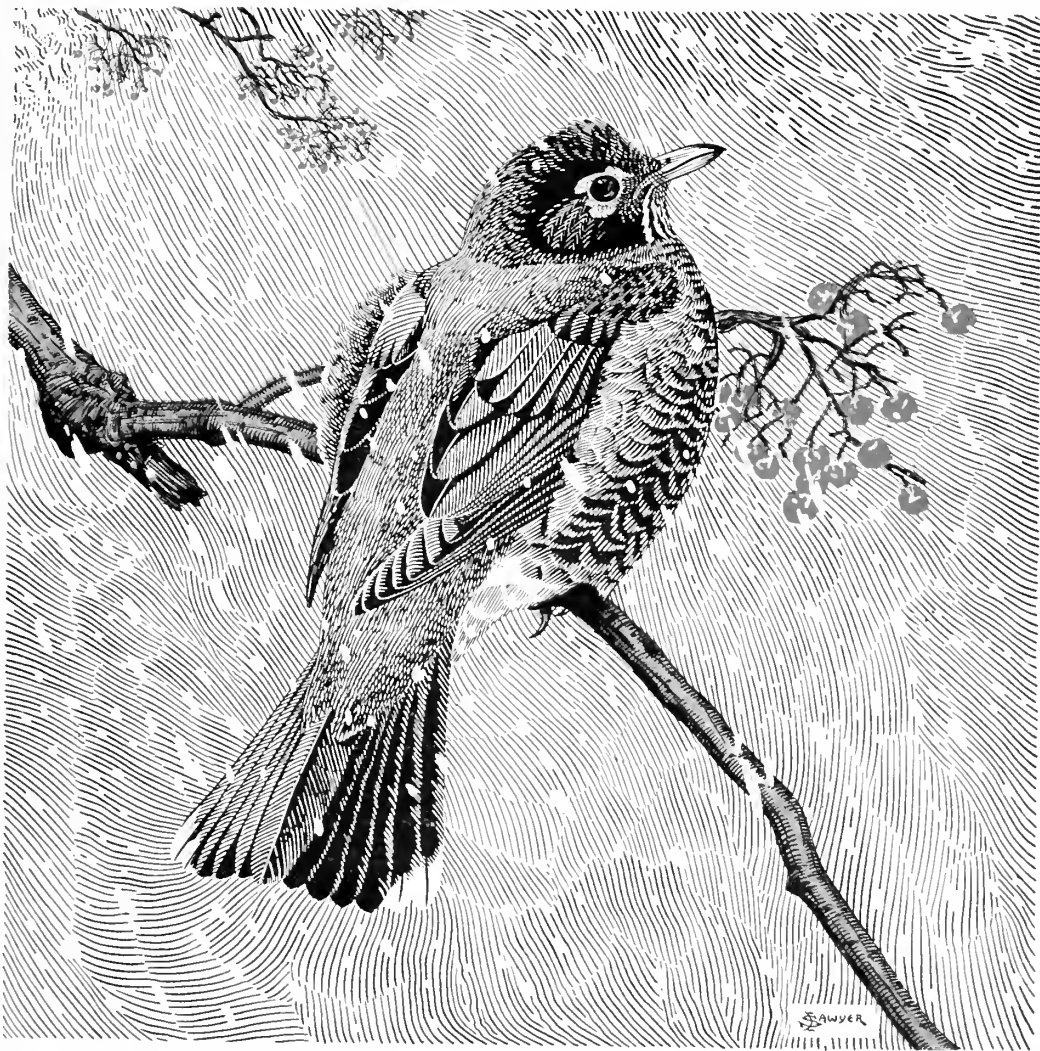
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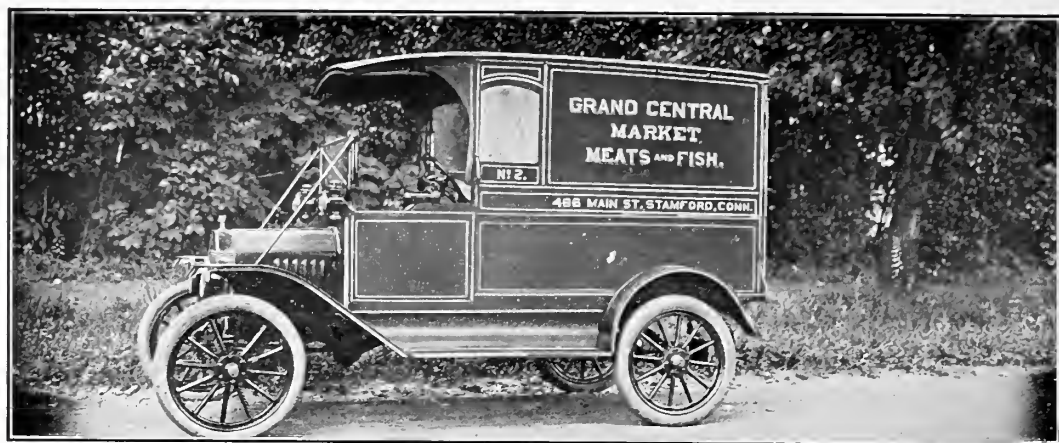
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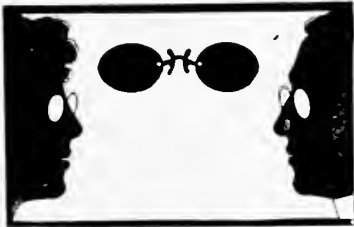
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A Magnificent Specimen of the Great Northern Hoary Bat Captured in Sound Beach.

Mr. Charles Ditman, gardener for Mr. James W. Brice of Sound Beach, captured and presented to The Agassiz Association a magnificent specimen of the hoary or great northern bat (*Lasiurus cinereus*). This bat is in this vicinity only in migrations from its summer northern home to the warmer south for winter.

This particular specimen measures one foot three and one-half inches from tip of wing to tip; is four and one-half inches in length, and one and three-quarters inches across the back. The fur is beautifully tipped with silver from which it takes its name, hoary bat. The head, eyes and ears are of unique and beautiful appearance, far excelling the common red bat in every respect. Almost every one has seen the red bat at least in flight in early twilight, but the hoary bat is seldom seen anywhere by any one, as even in the northern home it flies only after twilight.

"American Animals" (Stone and Cram) says:

"The hoary bat is the largest bat of the Northern and Middle States, and is the rarest of all our Eastern species. Even in the North, where they make their home among the forests and mountain wildernesses, they are seen only occasionally, and still less frequently are specimens secured.

"To the southward of the Canadian fauna the hoary bat occurs only as a migrant during the winter months, early spring and late autumn, and it is here, if anything, a rarer sight than in its true home to the northward. I have known of specimens being secured about Philadelphia, but in spite of many evenings spent in looking for it at times, when its occurrence seemed most likely, I have never been successful in obtaining a glimpse of this interesting bat."

Dr. C. Hart Merriam gives a graphic description of the difficulty of even seeing one in the far northern home, and the almost impossibility of securing one, even when it "shoots by seeming-

ly as big as an owl within a few feet of your eyes."

Dr. Edward F. Bigelow, who chloroformed this specimen at ARCADIA, says this is the first he has ever seen.

Mr. Paul G. Howes of Shippan Point, who is mounting it for the Bruce Museum, says he has previously seen only one—about five years ago.

Mr. John Schäler, taxidermist, Stamford, says he has seen only two and both of those were many years ago. One he saw at night flying around a near-by ice house and shot it. The other he found clinging to his Lima bean vines.

Mr. Ernest Thompson Seton says in "Life Histories of Northern Animals:

"The Bat is one of the masterpieces of Creation. It exemplifies, in high degree, the perfect beast with perfect senses, equipped with perfect flight, so there be few indeed that in the scale outrank it. And the Prince among these winged ones is the magnificent Hoary-bat, whose imperfect history is before us. To the general and generous gifts of its tribe it adds great size, with corresponding higher power, a furry robe of exquisite beauty—a combination indeed of Sable, seal, and Silver-fox—and last, a blameless life."

The "Distant Husband" and the Bear.

The following missive was received by the forest ranger of the Pasadena district and read recently at the annual dinner of the Sierra Club in Los Angeles:

"Kind and Respected Sir:

"I see in the paper that a man named J—— S—— was attacked and et up by a bare whose cubs he was trying to git when the she bare came up and stopt him by eatin him up in the mountains near your town. What i want to know is did it kill him or was he only partly et up and he from this place and all about the bare. I don't know but what he is a distant husband of mine. My first husband was of that name and I supposed he was killed in the war but the name of the man the bare et being the same i thought it might be him after all and i thought to know if he wasn't killed either in the war or by the bare for I have been married twice since and their ought to be divorce papers got out by him or me if the bare did not eat him all up. If it is him you

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will know it by him having six toes on the left foot. He also sings base and has a spread eagle tattooed on his front chest and a ankor on his right arm which you will know him if the bare did not eat up these parts of him. If alive don't tell him I am married to J— W— for he never liked J—. Mebbe you had better let on as if i am ded but find out all you can about him without him knowing anything what it is for. That is if the bare did not eat him all up. If it did i don't see you can do anything and you need'nt take any trouble. My respekts to your family and please ancer back.

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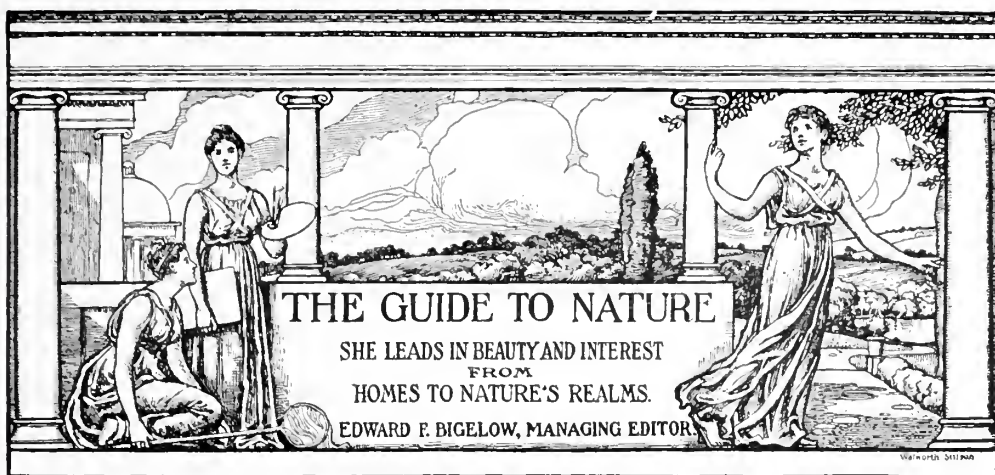
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Volume XIV.

NOVEMBER, 1921

Number 6

A Little Arcadia in the Heart of Stamford, Conn.

By Edward F. Bigelow, ArcAd iA: Sound Beach, Connecticut.

ALMOST in the heart of the city of Stamford, Connecticut, really in the heart of one of the most modern developments, Quintard Terrace, I have found an oasis. Here is nature amidst the arid conventionalities of the latest development of real estate interests.

I had been told by one who is well versed in recently developed homes, suburban and otherwise, that here I would find something to delight my eye, here I should find picturesque, wild nature.

The house itself and the front doorway convey an impression of artistic taste in architecture. A pleasing sight is the stone veranda, stone porch, well arranged shrubbery in formal manner at the edges of a small but closely mowed lawn, yet, as I rang the doorbell, I began to fear that after all it will be only formal nature study that I shall find here, perhaps with a slight flavoring of originality, but for real Arcadian nature I shall probably look in vain. After I had introduced myself

I was told that the artist was busy for the moment, but to make myself at home in the surroundings where a little work had been done in rustic gardening.

As I walked by the side of the house I was surprised by the croaking of a frog that sounded not unlike the barking of a dog. No more unlikely place for such warning—or was it welcome?—could be imagined, but a frog it was in a stone bordered pool. I thought at the time that the frog's cry was merely coincident with my entrance, but later when Mr. L. V. Carroll arrived and I asked him to show me how he arranged the plants and feeds the frog he said, "Do you know that frog is a good watchdog? It barks at every one that comes on the premises." A frog under these conditions might well be called a "barking" animal.

Mr. Carroll had to work with a rough and to most persons an unpromising back yard. An owner of less artistic taste would have cleared up the rubbish and set out, perhaps, a few formal



MR. CARROLL'S FAVORITE PASTIME IS TO PLAY WITH PLANTS AND FROGS IN THE GARDEN POOL.



THE PLANT EMBROIDERED PATH TO THE RUSTIC GARDEN.

evergreens with the intervening space well mowed; but not so with Mr. Carroll. He saw the possibilities of changing that crude material into beauty. The rough stones were rearranged with as little formalism as possible in the limited space. He laid out a miniature garden and at one end constructed this pool for aquatic plants and as a home for fish and frog. The beauty of his own place is enhanced by the adjoining rustic garden, the property of Mrs. Thomas Harvey, and, indeed, Mr. Carroll was personally aided by Mrs. Harvey in his gardening so that the hillside upon which he had to work

cement, for he himself got out the stones and laid every one in the cement.

Mr. Carroll, who is a specialist in color art, came to Stamford from Chicago a few years ago. His work is well-known in covers of "House and Garden" and "The House Beautiful" and catalogues of Barrett roofing, etc. With him for four years has been associated Major B. Felton of Danbury, Connecticut. Major Felton's specialty is commercial advertising designs in work for large concerns such as Cleveland Motor Company and the Cheney Talking Machine.



MR. CARROLL'S FAVORITE SKETCHING PLACE ON THE STONE STEPS HE MADE.

slopes into a charming Valley in Eden with the Forest of Arden on the other side. In the back yard of Mr. Carroll's home are several patriarchal trees that hover over the little garage in loving, picturesque manner.

"What of all this do you especially like? I wish to photograph you showing you in company with something that you especially like." I said to Mr. Carroll.

"I really ought to like these stone steps because I worked harder on them than on anything else."

Mr. Carroll is addicted not only to brush and paint pot, but to trowel and

An October Thanksgiving.

The woods are aflame with color,
The hills with tapestries hung,
The blue of the sky and the river
Are such as the poets have sung.

'Tis a feast for the eye and the spirit,
While the picnic is under way,
And makes, for the joyous partakers,
An October Thanksgiving day.

—Emma Peirce.

The old garden of Linnaeus at Upsala, Sweden, which had fallen into decay, is being restored. The house will be used for an extensive collection of furniture, books and other belongings of the great botanist.

Stingeth Like an Adder.

BY WILLIAM H. HUSE, MANCHESTER, N. H.

The adder is the only venomous snake in England. Its bite is a more or less serious matter, but it is incapable of stinging. The earliest mention of its ability to emulate the bees and their relatives is probably in Proverbs in the advice to abstain from wine for "at the last it biteth like a serpent, and stingeth like an adder." Marginal notes in some editions of the Bible give "basilisk" as the Hebrew word translated "adder." The Douay version adheres more closely to the original and has "will spread abroad poison like a basilisk." It is presumed that when the English revisers of King James's time came to the passage they feared that the basilisk threat would be lost on the English inebriate and so used the name of the only poisonous reptile on the island.

The English settlers in New England gave the name of adder to at least three snakes that they found there, presumably because their mottled appearance suggested the reptile across the sea.

They could reason and naturally concluded that as the English adder was poisonous these must be. Furthermore the adder could sting and therefore these must be endowed with the same power. So the misinformation has come down through the generations. I was informed when a boy that the milk snake, the water snake and the spreading adder (*Heterodon platirhinos*) were all poisonous, and that the last was possessed of a deadly poisonous breath. Fortunately I have learned better.

It is surprising to see how general the superstition still is. Boys catch snakes to take out their "stingers" if they do not actually kill them. Some locate the stinger in the tongue and some in the tail. Recently an intelligent man told me of seeing a snake strike a board with its tail and with such force that it punctured the wood and enabled a spectator to lift both board and snake. The wonderful event occurred when he was a boy, so that imagination or forgetfulness would doubtless explain the phenomenon.

Not long ago a local paper printed the following:

AUTUMN.

By A. R. Harper, Columbus, Ohio.

The jay with weird cry heralds fall,
 Along the road the glowing plumes of goldenrod
 Blend with the aster's violet hue,
 And 'mid their fading foliage nod.

A soft grey haze hangs over all,
 The brook is choked with dying leaves;
 The robins wing to roost in drifting flocks,
 And swallows sit in chattering rows along the eaves.

The corn is stacked in marshaled rows,
 With golden pumpkins in between.
 On every side, from bulging cribs,
 The harvest's plenty may be seen.

And as the shadows longer grow,
 The earth is resting, half asleep,
 Content to dream of labors past,
 While men her golden harvest reap.

So may I, when I come to pass
 Those last few hours in the afterglow,
 Find the fruits of my labor good to see,
 And in peace watch the shadows grow.

"A ten year old daughter of Fred Andrews, a farmer residing in the Gore district of Warner, was bitten by an adder while picking strawberries in a field near her home a few days ago, and is in a serious condition as the result. Beginning with a violent swelling of the injured limb, her whole body is now swollen and she has been attacked with frequent spasms. Book scientists claim that the adder, a checkered snake common in the fields of our state, is not poisonous, but this is the second case in that vicinity where the bite of this variety of snake has been followed by serious results.

"A farmer in the town of Newbury was bitten in the foot by an adder a few years ago and showed signs of poison similar to those exhibited by the Andrews girl. Physicians saved him at the time, but he remained in poor health for a year or two and died."

The story would not have been worth following up if it had not been almost a local affair and if the reporter had not referred to me as one of the "book scientists." (I was grateful for the "scientist" part of the fling.) A few weeks before I had nearly sent him out of the editorial window by taking in a live water snake. I got statements from the father and from the physician who attended the girl. I found that she did not know what bit or stung her. There was a mottled or spotted appearance of the skin and the father concluded that she must have been bitten by a spotted adder. The conclusions were evidently owing to stories of the terrible effects of snake bites told by those who were old enough to know better. At the time of my investigation the young woman had recovered from all but the fright.

I had previously known of the second case mentioned and that the snake bite had nothing to do with the man's death.

Thus superstition and ignorance, along with their resultant fears, are passed on from generation to generation, slowly but surely counteracted by such influences as those of The Agassiz Association.

The best collection of Maine minerals in the world is that of the Boston Society of Natural History.

White-footed Mice Resemble Squirrels.

In Dr. Robert T. Morris's interesting book, "Nut Growing," he makes the following comment upon the white-footed mouse:

"The white-footed mouse is nearly as destructive as the squirrel, particularly in relation to thin-shelled nuts. I had a large number of hybrid acorns and chestnuts covered with paper bags in one year when the ripening season approached and imagined these nuts to be all safe, but later discovered a very small hole in each bag close to a limb. In the bag a handful of shells showed where the white-footed mouse had eaten the nuts at his leisure, safe from his enemies, the owls. White-footed mice climb trees nearly as well as squirrels do—a fact which is not generally known because of the nocturnal habits of this species."

From observations made in the Rest Cottage of Little Japan we can add that the white-footed mouse manifests almost no characteristics of a mouse for it does not have even the mouse smell and is almost wholly squirrel-like in methods. In the construction of the Rest Cottage a hole was left at the base of the chimney where it could not well be discovered until a facing board had been removed. This gave free access to the white-footed mice and they brought in acorns, stored them away and ate them after the manner of squirrels. They also helped themselves to the cotton lining of some of our comfortables, making literally comfortable nests for themselves. For over a year their raids on the building defied all attempts to keep them out because the place of access was not even suspected. There were however some compensations to the annoyance and the damage in the interesting observations that were made of the method in which acorns were stored between the folds of comfortables and in the cotton made nests in various places. Perhaps the most interesting and, as the children would say, "the cutest" of all was the filling of shoes and slippers with acorns, especially a pair of baby's slippers left in a bureau drawer.

The banners of the sunset
Are swift unfurled on high,
A setting for the silver moon,
Suspended in the sky.
—Emma Peirce.

TO KNOW THE STARRY HEAVENS

The Heavens in November.

By Professor Samuel G. Barton of the University of Pennsylvania.

THE faint summer constellations are now disappearing over the western horizon. The brilliant winter constellations, led by Taurus and the Pleiades, are appearing in the east. The big dipper in Ursa Major is in its most unfavorable position low in the north. The Milky Way lies nearly east

and west. The stars visible on a dark night are too numerous to count. In reality we cannot see more than two thousand at any one time. In some places the stars are very scarce. This is true in the large area included in the great square. In Figure 2 I have drawn the square including all stars to the

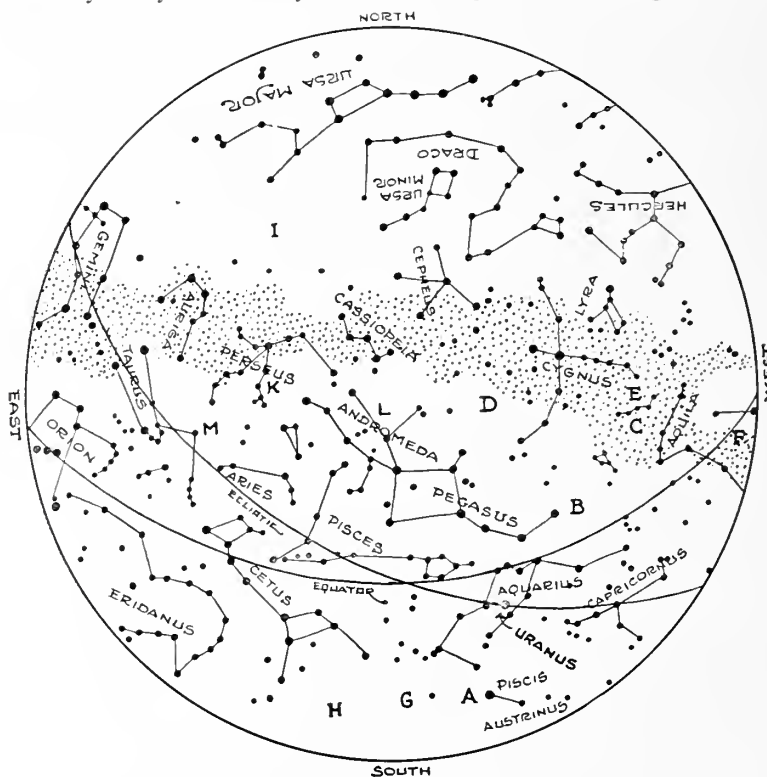


Figure 1. The constellations at 9 P. M., November 1. (Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.)

and west. Fomalhaut, the southernmost figure first magnitude star visible here, may be seen in the south at A, Figure 1. Near the center of the map lies the well-known "great square of Pegasus." One of the stars which form this nearly perfect square belongs to the constellation Andromeda. It is a common im-

sixth magnitude; that is, all of the stars usually considered as visible to the naked eye. There are just nine such stars in the square. The figures beside the stars represent their magnitudes and the individual names of the brighter stars are also given. The star at the upper right-hand corner is some-

times called Scheat but this name is not used as frequently as the others. It is a variable star. The magnitude varies between 2.2 and 2.7. It is an interesting observation to pick out a dark night and search for these fainter stars. It will be seen that most of them lie near the diagonals of the square. If the stars are not seen with the naked eye they may be found easily with opera glasses. Some may be able to see even fainter stars than those marked.

Just south of the great square lies the group of faint stars forming the

magnitude. At E is Vulpecula et Anser (the little fox and goose) usually known as Vulpecula. It is known principally by reason of the fact that the dumb-bell nebula is found within its bounds. At F, just at the edge of the map, is Scutum Sobieski (Sobieski's shield), usually known simply as Scutum. At G is Sculptor and at H Fornax (the furnace). At I, Camelopardalis (the giraffe).

* * * * *

The Planets.

None of the brighter planets are visible in the early evening. Venus, Jupi-

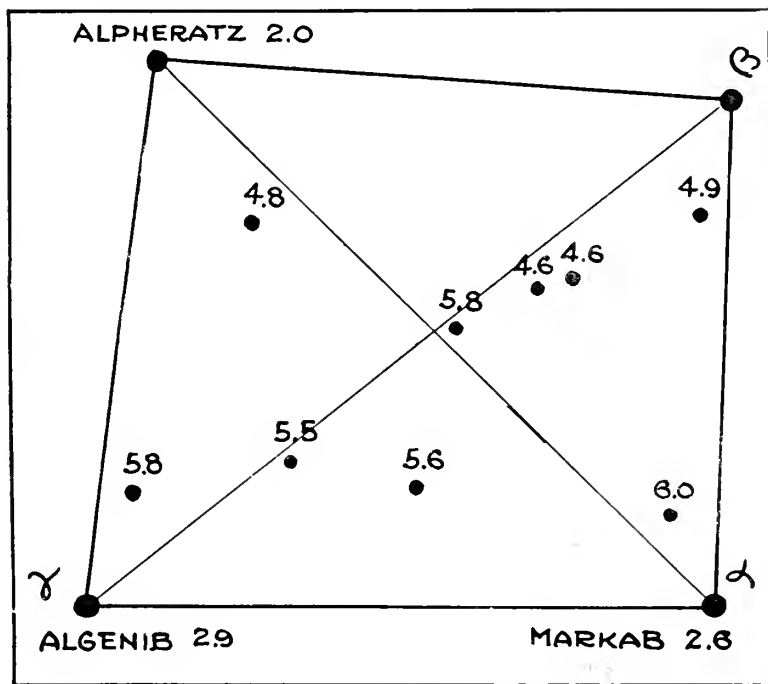


Figure 2. Stars brighter than 6.0 magnitude in the great square of Pegasus.

"Circlet in Pisces." Near the great square are several of the constellations which are least well-known by reason of their faintness and small size. Pegasus is the winged horse. B is at the center of Equuleus (the little horse). Delta Equulei is a visual double star whose period is the shortest of any known. The period is under six years. West of Equuleus is Delphinus (the dolphin), well-known as Job's coffin. It consists principally of a rhombus of third magnitude stars. West of this at C is Sagitta (the arrow). At D lies Lacerta (the lizard). It contains no star brighter than 3.8

ter and Saturn are in the constellation Leo, and Mars in the next constellation Virgo. Neptune is also in Leo. These planets, except Neptune, which is not visible to the naked eye, may be seen in the east before sunrise. As they are closely grouped the planets are of unusual interest at this time. The planet Mercury can be seen low in the southeast just before sunrise for a few mornings about November 16. The planet Uranus alone can be seen in the early evening. This is a little too faint to be seen with the naked eye. With opera glasses or other slight optical assistance it can be seen easily. Its position is marked on Figure 1.

In Figure 3 the fainter stars in the neighborhood are shown, although there is little chance of a mistake in finding the planet. The stars joined

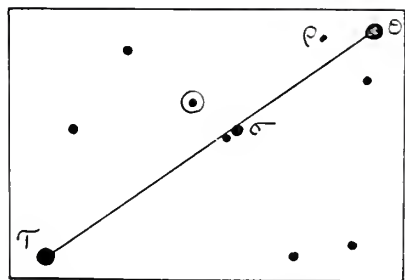


Figure 3. Position of Uranus. Planet enclosed in circle.

by the line are those joined in Figure 1.

* * * * *

November Meteors.

This is the best month of the year for the observation of meteors. The Leonids appear to shoot in all directions from the constellation Leo. They can be seen only late at night. The middle of the period when they may be seen is November 14. They may be seen on other nights about this time. The Andromedids come from Andromeda, which is nearly overhead in the early evening. These meteors may be seen in the early evenings about November 26.

* * * * *

Eclipse of Algol.

The star Algol or Beta Persei at K, Figure 1, is partially eclipsed at intervals of a little less than three days. The star will be faintest November 18, 10:06 P. M., and November 21, 6:55 P. M. The star should be located and its brightness noted on nights previous to the eclipses. Several hours are required for complete eclipses.

At L, Figure 1, is the great nebula in Andromeda, an object faintly visible to the naked eye on dark nights.

* * * * *

Diameter of Stars.

Less than a year ago announcement was made that the diameter of the star Betelgeuse had been measured. The revised results showed that the diameter of this star is 238,000,000 miles. It was believed that this was the largest of all stars. Later observations by the same observers have shown that Antares in the constellation Scorpius is still larger. Because of uncertainty in

the distance of this star its diameter cannot be stated with great accuracy. The smallest value resulting from the use of the different determinations of the distance makes the diameter 280,000,000 miles and thus the volume 31,000,000 times that of the sun. Antares is not on the map. It may be seen very low in the southwest in the very early evening.

The distance of the Pleiades (the group of stars at M, Figure 1) has been determined recently. The results show the distance to be about 325 light years.

In November.

Think you the earth is dreary
Because November's here?
Are you, then, a-weary
Of this dull month o' year?

Come with me to the woodland,
Where Nature hath precious store;
Where color you'll find, and beauty,
And many a treasure more.

See ferns as green as summer,
(Those that love winter, too.)
Spreading their fairy circles
The winding pathway through.

The spruces, pines and hemlocks
Are fresh as it were June,
And balsam firs as fragrant
As with the birds attune.

The mosses, in profusion,
Wear brightest green of all,
And the exuberance of summer
Refreshingly recall.

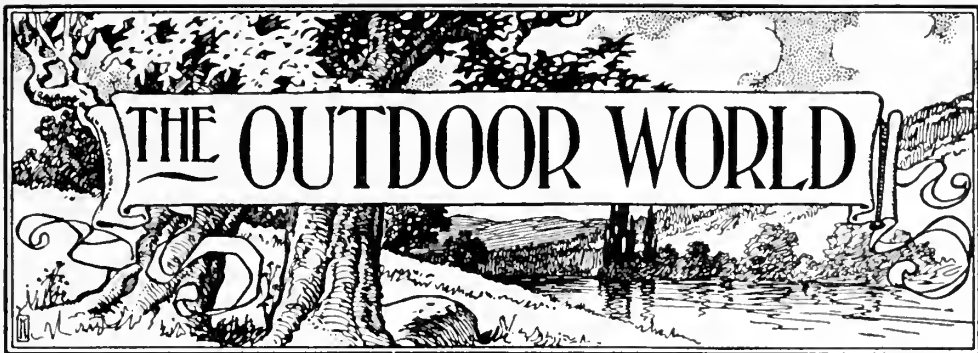
Where will you find such tissues
As young birch saplings show?
With a riot of brilliant shadings
Their boles are all aglow.

Buds, too, revel in color,
Bronze and green and brown;
Rose in the dainty moosewood,
Gold in the willow's crown.

Now, can you call it dreary,
When gems like these abound?
Though you may indeed be weary
Before the half is found.

—Emma Peirce.

The Massachusetts Audubon Society, Newberry Street, Boston, furnishes its check lists of birds free to all who ask for them. Many persons keep these lists each year and turn their records in at the society's office. Even children send in lists of sixty to more than a hundred species seen.



Camping, an Education and An Inspiration.

I once knew a marked example of the educational inspiration that a camp gives to a girl. She was about fifteen years of age, bright, vivacious, witty, popular with her friends and the admiration of every adult that met her. I was one day expressing my admiration to some friends who had long known her in her western home. They expressed surprise at her wonderful popularity in the camp and made this sententious remark. "Yes, she has developed into a wonderful type of popular girl, but it was camping that did it. She was not so in her own home before she went to camp. Camping seems to have emphasized every good quality that she had and developed some others that even her parents had not suspected."

Parents that have had no personal experience in high grade camps cannot realize what a wonderful developer camp life is. Ralph Waldo Emerson said the best part of a boy's education is that which he gets on his way to and from school. If Emerson had lived to see the modern camp, the thought that he has buried in that laconic sentence he could have paraphrased into another like this: "Two months in a good summer camp are worth more than a year in a boarding school." That is, the best education is obtainable from outdoor life and enthusiasm. It is neither sentimental nor bookish. It is the actual thing, a kind of personal reality. I have in my possession many photographs and lantern slides of girls that have developed in camps into what one might call royal good

girls. It is a satisfaction to gaze on such whole-souled, hearty, natural girls. They show a brightness and a vivacity far superior to that that can be developed by books. I do not say this to the discredit of thorough scholarship. Far from it. But you know that old saying, "A good mind in a sound body," is not asserting that the one is better than the other but that they are a partnership. The school develops the mind, the body is incidental; the camp reverses the condition. Both are needed for complete development.

But you ask, "How does the camp do this? How does the camp differ from any other picnic?" The camp is not a picnic, and the question is difficult. One may observe the fact yet not be able to explain the fact. Although I have had extended dealings with girls in camps, I do not profess, I do not assert my ability to propound a complete theory, but I should say that there is something about all young people that is gangish. I do not know that the word is in the dictionary but you see it exemplified every day in a camp. We older ones have resources in ourselves. We can get along fairly well even in solitude but even we frequently feel the need of other human beings to whom we may speak. Healthy, happy girl or boy is usually contented only with others of the same age.

Sometimes it is a painful blow to parents to learn that we are not so much to our children as we supposed. The real inspirations to young people come from those with whom they associate, and the more intimate and personal the association the greater the

influence. A good camp is composed of youthful, selected personalities. It is a sort of melting pot to mint the best youthful characteristics. One cannot analyze every psychological or physical phase of the problem. There are other things in life in the same category.

You are laboring under a loving delusion when you think you are all in all to your child. "I could not bear to have her away from me. She knows that mother is the best friend she has in the world." That may be true, yet the fond mother has her limitations. There are many things that she cannot do to that child and when she attempts to take the entire responsibility the greater the danger of doing injury to her beloved daughter. "It would be absolute cruelty to her and to me to take my daughter away from me for two months in the summer," exclaims the fond mother. "You do not know what companions we are and what good times we have in each other's company."

Oh, yes, I do. I know all about it. One of the defects of human nature is to think that the whole world centers in us. I have felt in that same way. I thought that in many things the cogs would get blocked and wedged if I was not around to manage the machine. It comes as a painful mental jolt to learn that much as I am appreciated certain others are appreciated even more. I was once talking with a fond mother about her personal relation to her daughter, and how her daughter adored her. A few minutes later she called the daughter into the room. I wish I could have taken a photograph of the look of astonishment that came into that mother's face when the daughter expressed in emphatic terms her unwillingness to go that summer to the country home but her special desire to accompany Daddy Bigelow to camp.

The mother was appalled. "Do you mean to say that you would rather go with him than with your father and me to our summer home, and have all the parties and everything else that we would give you?" When the girl left the room I said, "She has come to one of the turning points in her life. If I may paraphrase all that she has said, 'Now, dear mother, when I was a baby, I thought like a baby and you treated me like a baby, but now I have become

a girl and I like to do things for myself in a girlish way like other girls.'"

That is all there is to it. The mother had no reason to think the daughter was rejecting her affection. The girl appreciated her mother as much as ever, even more perhaps, but she was entering upon a new era when she did not want to be led around at the end of an apron string. She wanted to do, think, act for herself. That was some two years ago. The girl's development has been all that any fond mother and father could have desired. It has been a delight, because both parents had the good sense to learn then and there that they were not as important as they imagined for the development of that girl. They accepted the condition in the right spirit and in the words of the novel, "They lived happily ever afterwards."

No amount of parental love can compensate her for the loss of young companionship. Bread may be the staff of life but other things are needed to make the handle to the staff. Home influence, school-teachers are necessary, so far as they go, but there are other concomitants as necessary, and any parent who can afford it yet deprives a girl of two months in a camp is unconsciously, through her mistaken affection, depriving that daughter of one of the most important conditions of development of girl nature.

There is another argument equally fallacious and no less subtle. "Oh, yes, I know, Mr. Bigelow. You are a naturalist and think all the world swings around trees and birds, flowers, bugs and such things and, yes, I will give you credit for outdoor life in general." Then comes that delightful smile intended to clinch the argument, "I agree with you perfectly. From my childhood I have adored all those things and realized the value they have been to me and am thoroughly determined not to deprive my daughter of the benefits of any of them. So every summer we take her to our country home where are the most picturesque roads you have ever seen; she has a pony to ride; the governess takes her into the back yard and lets her play in a nice tent that we got especially for her. You should come and see the delights of that little tent in our back yard. She has the sweetest governess in the world and they are as fond of

each other as any two sisters could be."

Dear mother, you mean every word of that. Honestly you do, but pardon me. I would like to leave the room to shed tears of sorrow at the hopelessness of your fond delusion. That daughter endures the governess and the little tent, partly because she has not known anything else and partly because she cannot get anything else.

But some day if you will visit a good camp you will realize that you are on the wrong road. The *esprit de corps* of a girl's camping with her peers is just about as different from that governess and her little tent in the back yard as were Robinson Crusoe and his man, Friday, from the social set in which you so much delight. You do not employ a dancing master and retire from the world to hop upon some little lone platform in the valley. No, you like to get in the set with others. You like to feel you are one of many. You are at home with those whose society you love and who love you. Unless you want to wring tears of compassion from me, do not tell me another word of that little tent with the sweet governess and the tree in the back yard. It is about as far removed from camping for a girl as the north pole from the equator. The governess is right until the girl is about nine years of age. The value of the teacher's continuous presence with the child ends where the camp begins and that is when the girl is about nine years of age. No, that is not too young. Do you not know that the girl is always a little older in her ambitions than she is in your mind?

Haven't you and I lived long enough to learn the simple lesson about which we sometimes theorize, sometimes talk, yet sometimes fail to let it permeate our life so as to result in action? Love is the greatest thing in the world. It is the love and the companionship of human beings that engender happiness. It is not banks, it is not automobiles, no, I will be frank and take you into my own field, it is not even good old Mother Nature. With my appreciation of the delights of the forest, the fields, the meadows, the microscope, the telescope, the grandeur of the heavens and the wonders of the invisible, I will be frank with you and say that all these

things put together in a day do not give me a tithe of the happiness that a kind word of love and appreciation sometimes gives. Expressions of comradery do not come from trees nor butterflies, but from people, and the nearer those people are to your own walk in life, the better they understand you as you know they do, and the greater is the happiness their appreciation gives you. That is the secret, that is why a girl likes camp. She is with her compeers. She matches her royal good nature with that of others, and when she goes to bed at night in her bungalow, she is not grateful to her canoes nor her horses, nor even to the councilors, nor the good food of the dining room, but what makes her happy is that she has had a good time with girls who have responded in kind to her own nature. She has made them happy and they have reciprocated in kind.

Let me tell you that the best thing you can do for your daughter is to send her away from you for a summer to a first-class camp. Send her with some one that knows camps and will see that she gets started on the right road in the right spirit. It may come as a shock to you if I tell you that I can take your daughter out of a beautiful home and insure her happiness in a high grade camp and do her a better and greater service than father and mother both can do. If I had started out with that proposition it would have immediately incited a spirit of opposition and antagonism. You would have said, "We are more to our daughter than you or any camp in the world can be." But is it true?

The great art of getting along in this world is after all to be a good mixer. The world is made up mostly of people. It is these people that can make or unmake our prosperity, increase our adversity and bring us happiness or sorrow. Let us start early to learn the lesson of getting along with others.

I have already said a good deal but there is much more I should like to say, but that I reserve for personal conversation. Invite me to call on you some evening, and I will answer all the questions you wish to ask. Address Edward F. Bigelow, ARCADIA: Sound Beach, Connecticut.

Photographic Initials of Poultry.

Through the kindness of "The Poultry Item," Sellersville, Pennsylvania, we publish a cut of the photographic initials P. P. F. formed by the single comb white Leghorns, and taken at the Pennsylvania Poultry Farm, Lancaster, Pennsylvania. Most of us have seen the American flag and other designs made with human beings properly arranged, and some elaborate fig-

ures of the soldiers during the war, a comparatively easy task as the actors were under orders and would "stay put." But this poultry farm excels us at ARCADIA if the owners can make a white Leghorn hen stay for half a minute where she is put.

Another thing that interests us in this unique photograph is the fact that the hens are so evenly distributed over the letters. We suppose the design was marked out with food attractive to these restless birds, but that does not solve the problem. According to our experience with white Leghorns, in such conditions they would pile themselves together two or three deep in one spot, eat that place clean and proceed to clear up another without the slightest hesitation.

Observe that there are only six or seven scattering or detached hens in the entire picture. With so big a flock it is astonishing that so few were afflicted with the hen's usual lack of common sense, especially among hens so nervous as the white Leghorn. We understand that the white Leghorns at the Pennsylvania Poultry Farm are good layers. "The Poultry Item" has published their remarkable record. But the magazine has not done justice to the photographer's skill nor to the unusual common sense of the hens—or shall we say their commendable obedience?

We therefore offer our appreciation of the photographer's technique, and feel sure that even the professional artist will recognize the difficulties that have been so perfectly overcome. In regard to the docility of the hens we are speechless.

Our Camping Place.

Around our camping place,
As far as we can see,
Unbroken forest reigns,
In its entirety.

Tiers on tiers of trees
In deepest living green,
Rear majestic heads,
And dominate the scene.

With the ocean they compare
As an impressive sight,
Or with the mountain's vast,
Or starry hosts at night.

Their breath, the breath of life,
Is offered free to all
Who leave for such retreat
A city roof and wall.

—Emma Peirce.



MUCH SKILL REQUIRED TO GET HENS TO ARRANGE THEMSELVES SO REGULARLY IN ALL PARTS OF THE DESIGN.

An Eleven Inch Wasp Nest.

BY FRANCIS ROLT-WHEELER, BEE TREE P. O.,
NORTH CAROLINA.

I send you herewith a small box containing chambers of the nest of a mud dauber of the wasp family. It was built on the door of my bungalow. The chambers forwarded contain, in the upper one, a larva beginning the pupa stage; in the lower, larva in the larval form. You will notice also several specimens of a spider, apparently pierced in the ganglion or, as Fabre suggests, in the body only, and paralyzed as is the manner of certain wasps preparing a food supply for carnivorous larvae.

The nest was approximately eleven inches in length but this morning, possibly because of an unwitting violent closing of the door, one-half of the nest was found fallen on the ground. The spiders were in the state forwarded. Some were clearly dead, others as clearly alive but unable to move, yet others able to make slight movements. We have closely observed this wasp building her nest, yet have never observed her bringing in any such spiders.

Butterflies and the Droppings of Birds.

From Dr. Francis Rolt-Wheeler, Bee Tree P. O., North Carolina, comes this interesting note on butterflies:

We have observed many butterflies here which nourish themselves mainly on the droppings of birds, softening them with liquid excrement. These butterflies are attracted by anything white, such as a small morsel of paper or a piece of broken china. They are seen here in great numbers.

Heard the Piping Note of a Worker Bee.

In a personal letter, Mr. Frank B. Hopkins, Esparto, California, makes note of the following astonishing observation:

"Have you ever been able to locate a laying worker? Mr. Ralph Benton, son of Frank Benton, was conducting classes in bee culture at Ontario this summer. One day while inserting a frame of queen cells we were able to locate a worker by her piping note. Such plaintive evidence of anxiety and distress I have seldom heard from a lowly creature. There was an appeal

in it to me, as though the poor thing recognized the end of her usefulness and was singing like the wives of old before their sacrifice on the pyre."

Not all of us who have worked extensively with honeybees have heard even the piping of the queen, much less the piping of a worker bee. This is an unusual observation by a trustworthy observer.

A Brave Nuthatch.

New Haven, Connecticut.

To the Editor:

The other day a nuthatch came to an elm tree in front of my home. A pair of English sparrows were on the ground near by and one of them flew on to the tree very near the nuthatch intending to drive it away. But instead of leaving the sparrow in possession the nuthatch raised his wings, spread them out as wide as possible and made a whirring sound. The sparrow flew over to his mate on the ground and after a short consultation they both flew to the tree, one on each side of the nuthatch, determined to drive him away. But no! the brave little bird repeated his first performance with the result that both sparrows were frightened away, and so long as I was able to observe they did not have the courage to return.

Sincerely yours,

MAY F. FIFIELD.

A November Bit.

Merely a woodland pool
Upon whose surface floats
A handful of autumn leaves,
Like little fairy boats.

Bare are the trees around,
For summer has passed us by;
But beauty lingers still
For the nature-loving eye.

—Emma Peirce.

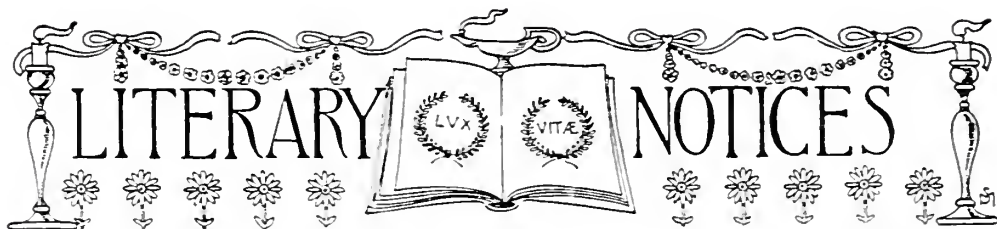
Little Mary came into the house bedraggled and weeping.

"My goodness," cried her mother; "what a sight you are! How did it happen?"

"I am s-sorry, mamma, but I fell into a mud-puddle."

"What! with your best new dress on?"

"Y-y-yess, I didn't have time to change it."—Central Wesleyan Star.



LITERARY NOTICES

POULTRY AND HOUSES OF OUR BIRDS. Prepared by Various Authors. Edited by T. Gilbert Pearson. Illustrated with One Hundred Colored Plates by Louis Agassiz Fuertes, R. Bruce Horsfall, Edmund J. Sawyer, Allan Brooks and R. I. Brasher; also Sixty-nine Photographs and Drawings from Nature. In Two Volumes. New York City: National Association of Audubon Societies.

Here is the embodiment of a good idea. For many years we have been using the educational leaflets of the National Association of Audubon Societies because they contain so much valuable text and so many accurate illustrations, although they have the disadvantage of inconvenient reference. These leaflets have now been skillfully edited by Mr. Pearson and arranged in two convenient and well bound volumes. The text is easy reading. The subheads are catchy and suggestive. There is an even balance between half-tones from photographs and illustrations from beautiful drawings. The various chapters represent a wide range of authorship by our best ornithologists. Considering it in all its aspects it is one of the most inspiring books about birds that have come to our desk. After only a short reading the reader wants to hasten out to the fields to see and study the living birds.

We welcome this delightful work of the Audubon Societies and hope it will be eagerly sought by Members of The Agassiz Association and by our personal friends. We recommend it heartily and assure the reader that money invested in the purchase of these books will pay a satisfactory dividend although the purchaser may already have a set of the leaflets.

THE STRANGE ADVENTURES OF A PEBBLE. By Hallam Hawksworth. New York City: Charles Scribner's Sons.

The poorest part of this book is on the front cover. The title is misleading. The author has written a popular, elementary geology using a pebble as the text, but with about the same degree of fitness with which one might detail the history of agriculture under the title, *A Kernel of Corn*. The author's attempt to popularize, evidently for youthful readers, the story of the physical constitution of the earth by referring to the earth as a large pebble is juvenilizing for the reason that to a child a pebble means a pebble. A pebble does not connote the earth nor the nebular hypothesis nor the story of evolution. Aside from the misnomer and aside from the general air of

overpatronizing the dear little child, the book is a fairly good one. The author "talks down" to the child. Some children may like to be patted on the head by a literary or a scientific man and called 'My dear Johnny' or 'My dear Susie.' Mr. Hawksworth's fault is not so great as the more common one of personifying inanimate objects. We are pleased to note that he does not make the old earth hop around on Brownie legs nor load great boulders in a gocart. He has, however, approached that method by expressing serious facts in terms of play but even that is not bad when he calls his literary notes, "Hide and Seek in the Library." There is throughout the book a delightful simplicity and pleasing directness of style. The language is in the main better than the thought, evidently the result of the author's earnest and commendable desire to simplify the subject for little folks. He has done more than that. He has prepared an interesting book for older persons. Scientific subjects may be stated simply but not in the style of "Dear little Oootsie, Tootsie." We hope the author will write another book in a similar simplicity and directness of style, but without his present painfully patronizing manner. At present, when he is making some of his best and most interesting statements he assumes an attitude of talking from the colossal heights of "knowing-it-all" down to those who do not know much of anything. The author is well informed in his subject. It may be that what we have said, including what seems to be unfavorable criticism, is really laudatory of the book. Perhaps the reader who has no special training in the study of nature will be delighted with the subject matter and by the author's friendly although patronizing condescension. Some persons may like to think of our old earth as a big pebble. In that case what would they call us little chaps that live on the surface of the pebble?

Waste Places.

So lavish Mother Nature,
So prodigal her store,
That even bare, waste places
Must e'er be sicklied o'er
With the mantle of her beauty,
With a web of color bright,
That flashes in the sunshine
As facets catch the light.

—Emma Peirce.



AUNT HANNAH SEES ARCADIA

Finds It a Storehouse of Knowledge
Having to Do with Nature.

STILL IN INFANCY AS TO DEVELOPMENT

Has a Great Field in Which to Use Its
Opportunities.

[From The Daily Advocate, Stamford,
Conn., Oct. 4, 1921.]

To the Editor of The Daily Advocate:
Nestled in a wooded setting at Sound Beach, Connecticut, is ARCADIA, the nature spot of an interesting study. I was led to turn my face in that direction, knowing that a modest little magazine, THE GUIDE TO NATURE, had its source of publication from that center.

With a turn of mind to scan the contents of books offered to the reading public, I noted its purpose and aims, its artistic beauty of finish. I purposed at the first opportunity to make ARCADIA my point of special interest.

Dr. Edward F. Bigelow, the managing editor, I had never come into personal acquaintance with. His spirited greeting and readiness of welcome were so strikingly apparent of one who had something to sell, I apprehended he wanted me to buy out the entire outfit. I soon found it, however, the very reverse of purpose. The only thought in mind when I came into view of the surrounding was, have I lived in Stamford so long, and overlooked this nature spot of informal wildness, with its interesting enclosure, its field of educational value, the character of work, the endeavor set forth to present to the public so varied an exhibition of nature's common things in such an un-

common method, the harmony which I beg to note could not be better expressed than to say it stands quite in compact with the personal proportions of the good doctor himself, and carries with it the pleasing cordiality of his personality.

I have before let it be known to the people of Stamford that I am not in accord with what is so insistently advised of school studies, that knowledge is to be taken largely out of books. Academically, it may be advanced of conception, but when the wisdom gathered and stored comes of the Great Teacher out in the open daylight, in the practical lead of the senses which come in contact with nature's range of beauty, even of her wildness, and from the living creatures which have the freedom to follow habits in the wild, here in ARCADIA is noted this character of life. These treasures of interest out of a fund limited of resource as I have gathered of information in my ramble over this field of study, be it indeed of wonderful accomplishment.

The amiable enterprise of The Agassiz Association under management of Dr. Bigelow is not without suspicion of the fact that it needs the help of more liberal support than has come to it. It isn't all for Sound Beach that I make this suggestion. "Stamford is my home," and there is such a thing as selfish reflection that has outreaching relationship to the surrounding country, and Stamford stands to come into its beneficial welfare as well. The cause in fact is country-wide, and appeals of educational value everywhere. Stamford's School Committee may not sanction all I am about to say on this point, but I believe that, if one day of the week were allowed the High School pupils to lay aside their books and devote the day at ARCADIA, it would ad-

vance their minds and strengthen their intellects to enable them to obtain certificate of school clearance some weeks ahead of what is possible under any system of tutelage they or the school faculty now use, and of which in this respect they seem not to have been appraised of. The beauty expressive of ARCADIA is the lifting thought above a pecuniary profit, the love of nature itself. It would be of little worth for one whose eyes seek curiosity alone, and of transitory interest.

Nature's Storehouse.

I take it, ARCADIA is of storehouse character out of which to obtain knowledge leading up to the Author of all being, setting forth in the order of wisdom the adaptations to the uses ordained of nature. Yet even the one curious, who "sees and tells," may out of a latent sense become enthused, and so led to grasp the true sense of it.

I noted in a letter by Dr. Bigelow, appearing in *The Daily Advocate* of September 20, among other things which he mentioned under the question, "What is ARCADIA for?" is: "To help us to live, to help us to die, to help us to help the other fellow * * * the nature that transmutes itself into a broader and better life." I saw in ARCADIA a nature-study park, where are to be found things of pleasing interest of an informal wildness. The more wild and disorderly of character, paradoxically, the truer and correctly beautiful does it present itself to the mind of him who looks upon it.

I did not expect to find elephants. Of the charming little four-footed creatures to be observed were the squirrels—the nimble feet with the bushy tail curled over the body when respectfully engaged in disposing of some selected morsel he has secured from the locality.

But of the bees and the honey of bees. A hive of bees has only one mother and several thousand good-for-nothings that are kept to be slaughtered at a proper time of the season, and sixty or more thousand workers to provide provender for the children. A funny thing of the bee is that it swallows all the nectar it gathers, and, after a while, it comes up manufactured into honey and is then packed away into cells.

Visit to Thirteen Buildings.

ARCADIA has thirteen buildings—Welcome Reception Room, Office, Laboratory, Wood-House, Birchen Bower, Astronomical Observatory, Botany Bungalow, Pet House, Apiary, Rest Cottage, Annex, Serving House and Storage Building. To each of these we were admitted and shown the particular uses made of them. Nymphalia the home of the nymphs of nature study; exhibitions with compound and projection microscopes of best make; an astronomical observatory with six-inch Clark telescope. Little Japan has Japanese decorations, Japanese evergreens and shrubs from Japan, a beautifully decorated interior. We were taken throughout the enclosure of about five acres, and lastly treated to microscopical views of plant life and of insect nature. "Knowledge is power" is true, but behind it is Capital, the medium by which it attains its potency.

ARCADIA, though established at Sound Beach but ten years ago, is practically in infancy as to development. The field is mighty large, and the work of that character which stands but second in order to Christianity itself, because in it is included all of moral grandeur that Christianity itself possesses, and what heart and mind of man accepts of truths of which the heavens contain and of what is found in God's secrets revealed in His footstool beneath. Dr. Bigelow has opened to the world in his study of nature his life's interest and is deserving of an appreciation which I am surprised has not been accorded him. Mankind at large is so superficially constituted, they do not naturally tend to more than what commercially concerns them. To cultivate the fields for bread and barter in the markets is the summum bonum of their aspirations. To grow corn and pumpkins for money value alone is to miss the real pleasure in living in God's creation. One might think of the millions, and the possession of millions of wealth, among so many that little more than a few might be born at least with a generosity and with liberality enough to bestow and bequeath to the support and maintenance of at least one such ARCADIA as found at Sound Beach, Connecticut.

Its Head a Busy Man.

Dr. Bigelow betrays in all his utterance a persistent confidence that somewhere at some time somebody will so loosen up on his bank account as to place within his use a fund consistently ample to found a Nature University that will live on when the present field workers are freed from this life's energies. It is with much sympathy I confess on behalf of my friend, Dr. Bigelow, when I beheld the amount of labor laid out and in prospect before him at his desk and in the laboratory, the work in hand in management, of duties attached to the young ARCADIA, the publication of *THE GUIDE TO NATURE*, responsive calls, and almost the last telling me, "We answer any question of a nature character the people want to know."

Dr. Bigelow has, besides his many personal friends, a large acquaintance with some others—Mr. Liberality, Mr. Kindness, Mr. Cordiality and their country cousins and aunts.

AUNT HANNAH.

Observations of Nature in ArcAdiA.

There are seven gray squirrels in ArcAdiA. We have had nearly that number for several years. They have the freedom of the premises, and occupy a little house in one of our trees and in the back yard of one of our neighbors, and for a part of the year they have nests of leaves in the tree tops. They amuse themselves by scampering over the premises as well as over a large part of Sound Beach. They are fond of running on the telephone cables.

This year they have acquired an entirely new habit—that of taking an ear of sweet corn from the garden and carrying it to the top of the fence or even into the tree top where they strip off the husks in shreds, eating the corn and apparently all of the cob. We have never yet found a cob that they have dropped but only nearly pulverized pieces. There are some indications that they eat the pith as well as the corn, chewing it off as they would gnaw a nut. It is interesting to note that in all their audacity in helping themselves to our corn they have not left somewhere on the premises a corncob and apparently not all the husks. It is pos-

sible that they may be using the husks to line their nests, yet on that point we have no direct evidence other than that the amount of husks around the grounds does not equal the number of ears that they are taking.

This is evidently a new venture for the squirrels and they are in the stages of learning how to climb up a grapevine arbor and carry with them an ear of corn. It was interesting recently to witness the slow dawning of the fact that a corncob may be carried much more easily by the end than by the middle. A squirrel with a cob held in the middle made repeated efforts to go up the wire netting on which the grapevines are growing. Finally he discovered that the logical method is to hold the ear by one end and climb up backward. Since the squirrel family and probably none of its predecessors had ever had any experience with the ears of green corn there was something in their conduct that approached pretty closely to reason and invention.

* * * * *

The frequent statement, made by those who do not keep bees but do have grapes, that the bees ruin their grapes is without the slightest foundation in fact so far as the extensive crop of grapes near our large Apiary is concerned. We have never had a complaint from Sound Beach of bees eating grapes, but we did have one case where the people thought, though incorrectly, that the bees punctured the peaches. It was found that the punctures were made presumably by birds and the bees merely helped themselves to the exuding juice. I have read the statement in bee journals that this explains the bees' attention to the grapes, but here in ArcAdiA they are not guilty of even that. There are bushels of grapes within a few rods of the Apiary and never yet have we seen a bee on a grape. They will not notice the grapes even when a bunch is laid at the entrance of the hive. We are planting sixty more grapevines this year. We feel confident that they will be immune from interference by bees. It seems strange that such a myth ever gained such credence. Barnum was right when he said that people like to be fooled and delight in fooling themselves.



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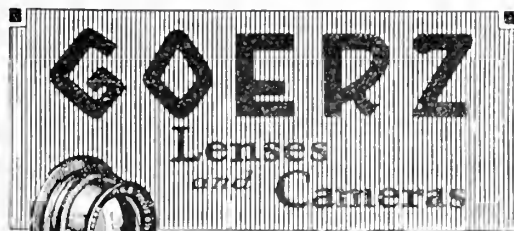
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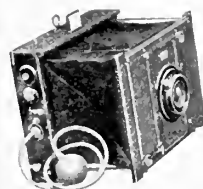
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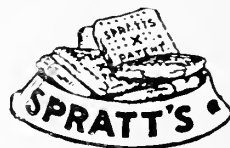
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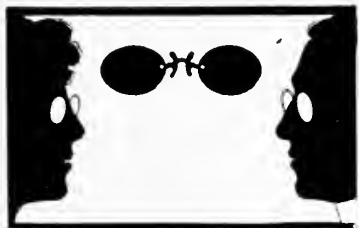
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A permanent set of teeth consists of eight canines, eight cuspids, two molars and four cuspidors.

Bacteria is distributed by drinking after people and by all means chewing their gum.

Franklin went to Boston carrying all his clothes in his pocket and a loaf of bread under each arm.

The alimentary canal is in the northern part of Indiana.

Sixty gallons makes a hedgehog.

Dew is caused by the swetting of the earth.

The stomach forms a part of the Adam's apple.

Hardships suffered by the Southerners after the Civil War: The wives of aristocrats and of gentle birth patiently made their husbands' trousers out of their own.

The hair keeps things from getting into the brain.

The nails would get very long if we did not bite them off occasionally.

Gender shows whether a man is masculine, feminine or neuter.

The three heavenly bodies are the Father, Son and the Holy Ghost.

Henry Wadsworth Longfellow was born in Portland, Me., while his parents were travelling on the Continent. He made many fast friends; among the fastest were Alice and Phoebe Cary.—New York Sun.

Troubles of an Astronomer.

Church — Who's your friend you were just talking to?

Gotham—Oh, that's Prof. Stargazer, the astronomer.

"He looks disappointed."

"He is."

"Looking for a new star, I suppose?"

"No; for a new house."—Yonkers Statesman.

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Another Hit on the Professor.

Professor X, a very absent-minded man, was being shaved by the barber. After the operation he continued to occupy the chair, and the barber, thinking he had dozed off, said, "Asleep, sir?"

The professor started. "Bless me, no!" he exclaimed. "I am not asleep. The fact is I am frightfully near-sighted. When I took my glasses off I was no longer able to see myself in the mirror opposite and naturally I supposed I had already gone home."—Boston Transcript.

English as It Sounds.

Here is a singular incident showing how easy it is to mistranslate an overheard remark.

Said Mrs. A, one of the overhearers: "They must have been to the zoo, because I heard her mention 'a trained deer.'"

Said Mrs. B: "No, no. They were talking about going away and she said to him, 'Find out about the train, dear.'"

Said Mrs. C: "I think you are both

wrong. It seemed to me they were discussing music, for she said, 'A trained ear' very distinctly."

A few minutes later the lady herself appeared and they told her of their disagreement.

"Well," she laughed, "that's certainly funny. You are poor guessers, all of you. The fact is, I'd been out to the country overnight and I was asking my husband if it rained here last evening."—Boston Transcript.

The Naturalist Photographer.

"Pa, what's a naturalist?"

"A naturalist, my boy, is a queer codger. He'd much rather photograph a strange fish than a bathing beauty in a one-piece suit."—Birmingham Age-Herald.

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Ready with the new low prices
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Just drop in tomorrow and see for yourself.

On our third floor the Christmas assortments of china, cut glass and novelties are in much greater assortment than usual. The new electric lamps and shades, in our special room, you must be sure to see. On the second floor every inch of space is occupied with displays of ladies', misses' and children's ready to wearables.

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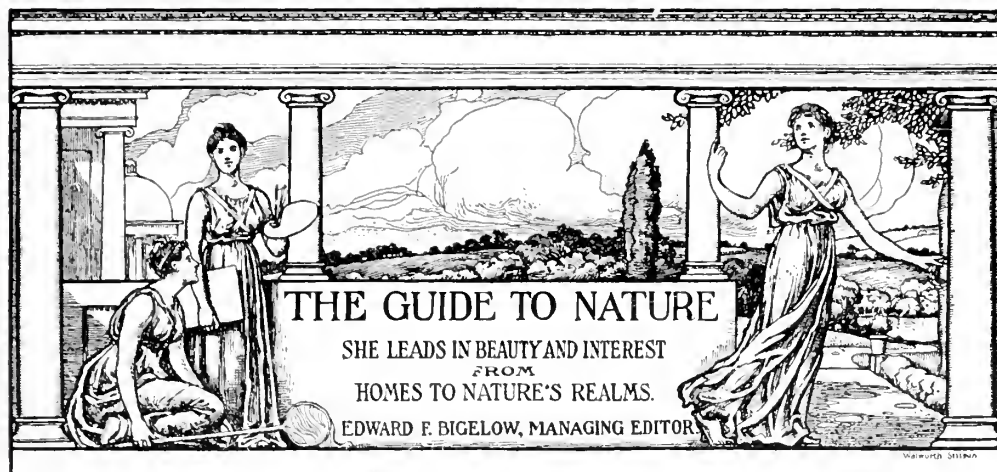
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Number 7

The Advantages Offered by Caged Animals.

The Humane Societies are saying a good deal about the discomfort of pets not properly cared for. These well meaning remarks are right so far as they refer to actual cruelty caused by lack of care. In that respect we heartily agree with them, but to the considerate naturalist it is evident that one may become better acquainted with a four-footed animal or a bird in captivity than by any other method. This we found true with a raccoon that was a resident in ARCADIA and was at first fed by the aid of a nursing bottle and afterward treated to toast and gingerbread, his favorite diet. That coon came to us without any seeking. In fact there was nothing to do but "bring it in" or let it die in babyhood. Never again do I want to go coon hunting. In fact I have not been coon hunting for half a century and I will never go again.

Recently my daughter discovered an osprey standing by our Welcome Reception Room apparently uninjured and looking around as kindly and in as friendly a manner as if that were the proper place for an osprey. Fearing the sharp talons I put on heavy gloves but these were not necessary, as the bird made no effort to escape nor to scratch or bite. It seemed at once

perfectly at home. It would not eat fish voluntarily but a liberal supply was put down its throat. On examination we found that one leg had been injured, evidently by a shot. The uninjured wings were large and beautiful and measured more than five feet from tip to tip.

I thought I knew an osprey because I had read and admired Mr. Clinton G. Abbott's monograph on this interesting bird and especially appreciated the beautiful photographs by himself and Mr. Howard H. Cleaves with which he illustrates it. But even their studies and extended experience in photographing ospreys have left unknown some desirable things that one learns in the actual handling of the bird. The books say that an osprey is a harmless bird but this one proved to be more than that.

There was something in its attitude that would endear it to any one holding it. With its sharp claws and with its formidable looking beak there surely was something decidedly dangerous in its appearance but only in appearance. The fact that the bird refrained from attack gave one a feeling for it closely akin to love and suggested the delightful thought that that love might be reciprocated, which as an actual natural

history fact it probably was not. But if one were disposed to philosophize perhaps the osprey's deceptive appearance of love is not the only case of that kind that has occurred in this world.

The bird's eyes had a kindly and beautiful look and its physical expression was all that could be imagined to increase the attractiveness of such a beautiful bird. It is with some considerable degree of self-control that I re-

the glass for the north side of his nest and his window was the size of a quarter dollar. I had to cut it off the glass where it had been well fastened by about three circles of its form.

An Artistic Grasshopper or Cricket.

BY C. D. ROMIG, AUDENRIED, PENNSYLVANIA.

This season I found on a lawn a number of odd forms of clover leaves. As a rule the three on a stem were



THE WOUNDED OSPREY THAT CAME TO ARCADIA AND WAS TENDERLY CARED FOR TILL IT DIED.

frain from telling the reader that that osprey actually reflected my daughter's facial expression of pleasure as she fondled it. But then, as Caesar said, "People easily believe that which they wish," and I fear that I, with other lovers of pets, like to think that the osprey was enjoying the caresses.

If it didn't that was not our fault for we did all we could up to the time when it seemed best to set the bird free by placing it as a beautifully mounted specimen in the Bruce Museum at Greenwich.

Hornet's Nest on Window.

BY C. D. ROMIG, AUDENRIED, PENNSYLVANIA.

Recently I found a small hornet's nest fastened to the middle sash of a garage window, through which I was able to watch the hornet at work. The insect saved time and material by using

much alike, no matter how freakish the form. In a few cases each leaf was pierced by a small hole that I was told was the work of hoppers. It appears that the hopper closed each leaf like a book, just one fold and one bite a la sandwich and the trick was done. The leaf when it opened had a uniform shape and, odd enough, the triplets were alike excepting perhaps where the hopper had been interrupted.

A Suggestion.

Mr. Romig has sent us a number of the clover triplets and there surely is uniformity of the holes similar to cutting folded paper. It is, however, somewhat to be doubted "that the hopper closed each leaf like a book." Can it be that the hopper eats only after dark when the clover leaves are folded in "sleep?"—Ed.

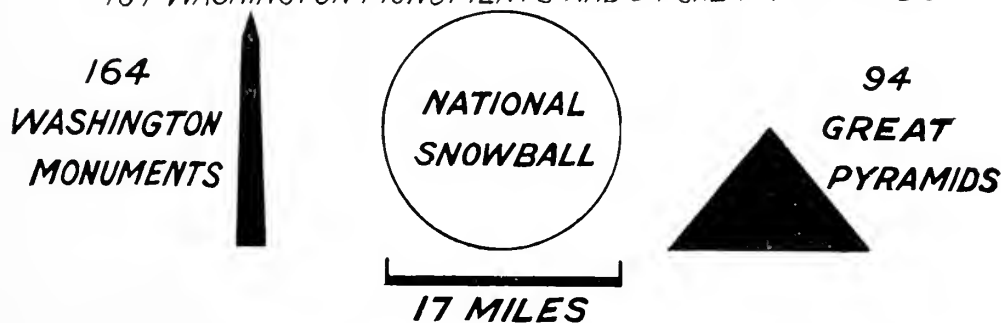
A Huge American Snowball.

BY CHARLES NEVERS HOLMES, NEWTON,
MASSACHUSETTS.

Of course all of us have at some time in our lives thrown one or more snowballs. Even older men like to see how far they can hurl one of these closely compacted balls, to compare the distance it will go with that which it went many years ago. And if the thrower be a man who has completed his fiftieth year, he will probably derive little satisfaction from his attempt.

aware, more snow is precipitated during some years than during other years. Therefore, we must compute the *average* annual snowfall. This average annual snowfall amounts to as much as ten to thirty feet in the Sierra Nevada region, to about eight feet in the state of Maine, while in certain parts of our country there is little or no precipitation. Our forty-eight United States contain a total area of about eighty trillion square feet and, if we subtract from this the area upon which

*A NATIONAL UNITED STATES SNOWBALL, COMPARED WITH
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Not only his range but also his accuracy will be sadly impaired. He will not be able to hit even a barn door, and it may be that he cannot throw a snowball as far as that door.

(You don't "hit" me, even at sixty-one! E. F. B.)

Now snowballs vary in size according to the individual bigness of the hands which form them. Some boys and girls make large snowballs, other boys and girls very small ones. It is probable that a snowball having a diameter of about two and one-half inches would approximate the average size of all the snowballs which were ever thrown. Of course several boys together can roll up a tremendous snowball, but neither they nor all the boys and girls in this country could make a snowball as huge as the one about to be described. Such a snowball would be formed from the total amount of snow falling upon the United States during the period of one year.

We all know that such a national snowball would be a stupendous one. To find out how large it would be, we first compute the total amount of snow falling upon the United States during the course of one year. As we are well

a lesser amount of snow descends, we have left seventy trillion square feet, upon which will fall an annual average of a little under six feet. Then if we multiply seventy trillion square feet by this annual average, we obtain four hundred trillion cubic feet, and 400,000,000,000,000 cubic feet approximate the total average yearly snowfall in the United States.

If this stupendous amount of snow were spread all over our country, over its 3,026,789 square miles of territory, each of these square miles would contain about one hundred and thirty-two million cubic feet of snow. In other words, each square mile of the United States would be buried under somewhat less than five feet of snow. And were all this frozen precipitation to descend suddenly upon the city of Washington, our Capitol would be covered to a depth of about thirty-nine miles. And the city of New York would be snowed under to a depth of about eight and two-thirds miles. If all of this snowfall were concrete, it would make a road fifty feet wide and one foot thick, extending, approximately, one and one-half billion miles. Or all this concrete would build a solid tower,

1,000 feet in length and breath at its base, over 75,000 miles in height. And if ten million boys and girls made snowballs from this stupendous snowfall, at the rate of 2,000,000 per second, never stopping until all this snow was used up, it would take these boys and girls, provided they didn't grow up and die in the meantime, about thirteen hundred and forty years. Nevertheless, such a long time is not remarkable when we consider that the total amount of snow falling annually upon the United States would make more than eighty-four quadrillion snowballs!

And now let us suppose that all this snow were rolled into one stupendous snowball—what would be the real magnitude of such a frozen sphere? In the first place, this huge American snowball would have a diameter of about seventeen miles. That is to say, its diameter would more than extend the length of New York City. Then, its circumference would approximate fifty-four miles and its surface-area nine hundred and thirty-nine square miles. In other words, its surface-area would equal about three times that of New York City. As we already know, the volume of this huge snowball approximates four hundred trillion cubic feet, and four hundred trillion cubic feet approximate twenty-seven hundred cubic miles. As we should expect, it would be a very heavy snowball, weighing about 1,250,000,000,000 tons. Were it to melt suddenly, all the water composing it would fill a cubic reservoir which would be nearly six and one-half miles in each of its three dimensions.

Some Mice Are Good Swimmers.

New York City.

To the Editor:

In the current number of *THE GUIDE TO NATURE* my friend, Irving Bacheller, has certainly presented an interesting photograph of a trout and nine mice from its stomach. Unless careful examination of the mice was made in relation to species there might be some question if these were "ordinary" field mice. A number of the lesser rodents are first-rate swimmers and take to the water without hesitation. The beaver mouse, however, habitually lives in the water much of the time and is found swimming about among the reeds in shallow waters where it forms

a prey for many other fish beside trout. Pike and perch are particularly fond of the beaver mice which constitute rather an important part of their food supply, and I have found this mouse a number of times in the stomach of the jackfish or great northern pike.

Among a good many mice which I have examined from the stomachs of various fishes when traveling in the North, the beaver mouse is the only one which I remember to have found serving as fish food supply. Doubtless any other mouse crossing a stream would be eagerly seized by a trout or any other fish which enjoyed a delicious morsel. I once found about twenty young pickerel in the stomach of a two pound trout which I caught in the Grand Lake Stream in Maine.

Yours truly,

ROBERT T. MORRIS.

Evergreen Ferns.

From every knoll they're waving,
As in the Summer sweet,
And when we cross the woodland,
Are crowding round our feet.

The "spinulose," so graceful,
The hardy "evergreen,"
The "Christmas fern," suggestive
Of many a festive scene:

The little "poly-podys"
Clambering o'er the rocks,
And in the swampy places,
The "crested" shield, in flocks.

With Autumn glories vanished,
They give us welcome cheer,
And the green torch of the Summer
Keep verdant through the year.

—Emma Peirce.

Boulevard des Ants.

BY DON C. SEITZ, COS COB, CONNECTICUT.

About midsummer I noticed a dark streak about half an inch wide in the grass leading between a flagstone at the foot of our piazza steps and a Baldwin apple tree ten feet away. Investigation showed that it started at a hole near the corner of the flag and was a well-worn road whereby a colony of big black ants made their way smoothly to the tree to milk the colonies of aphids dwelling on the leaves. The grass had been entirely removed and a fine Boulevard des Ants resulted—the insects keeping strictly up-to-date in the matter of good roads.

A Long-lived Woodborer.

From its burrow in the top piece of an old birch book-case at Mt. Pleasant, Iowa, a soft white wood-boring grub was shaken recently, when the owner discovered the newly made opening and conical pile of wood chewings that had been thrust out. There is nothing unusual about finding grubs in wood, but this particular wood-boring larva has a strange history.

The matured larva was given to the writer and placed in a box to complete its development. It pupated in about two weeks and in a few days the adult beetle emerged. It was *Eburia quadrigeminate* Say, a longicorn commonly known as the honey-locust borer, and is recorded as developing in hickory, ash and honey locust.

Mrs. Doe, who owns the book-case, is certain that the board in which the grub fed and grew from egg to a matured larva is no less than forty years old, as the book-case has been in the possession of the Does for at least that many years.

Just how and why this creature should have spent so many years in this humdrum life between the narrow walls of a thoroughly seasoned birch board only five-eighths of an inch thick, and never once coming out for air or water seems remarkable indeed.

Mr. J. McNeil, writing in the "American Naturalist," tells of two longicorns of this same species emerging from an ash door-sill that had been in place nineteen years. In that case the relation of the tunnels to the solid brick wall on which the door-sill rested seems to have made it certain that the eggs were laid in the wood before the house was built. This case seems to outstrip any known insect record in point of longevity.

H. E. JACQUES.

Iowa Wesleyan College,
Mt. Pleasant, Iowa.

—Science.

'Tis a dear little magazine and always a welcome visitor.—Miss Roberta F. Moore, Shreveport, Louisiana.

To American Beauties.

American beauties, divine of breath,
And dyed with sunset hues,
You, 'mong the fairest of the fair,
For roses I would choose.

—Emma Peirce.

Mouse Gymnastics.

BY G. HENRY HALE, TAKOMA PARK, D. C.

Imprisoned squirrels and white rats and mice exercise themselves turning wheels, but who would expect it of an unconfined mouse?

At the head of the attic stairs, just outside of my room, was a large empty squirrel cage with a wheel perhaps sixteen inches in diameter.

I was wakened one night by a squeaking, such as would be made by the turning of the wheel, proceeding from the direction of the cage. After listening quietly for a while, I lighted a match and saw the wheel slow down to a stop.

After this I heard the little fellow nearly every night. He seemed to have adopted the wheel as part of his regular routine. One night I determined to see him and, making my way very softly to the vicinity of the cage, I lighted a match and succeeded in seeing him escape. Perhaps it was a week before he returned. Then came the old program about the same time every night.

One night I was particularly restless, and the little fellow kept it up for some time till finally I crept across the floor and jammed my heel viciously against the cage. I suppose that was too much of a fright for the little fellow, for he never came back after that.

Pear Growing in Bird's Nest.

Mr. K. B. Mathes of Batavia, New York, reports an interesting observation of a chipping sparrow's nest on the bough of a pear tree. Over the nest hung a ripened pear so low that it just fitted the cup of the nest. Under the pear he found three eggs uninjured. Upon blowing them he discovered that they were slightly decayed from age, but were not incubated, thus showing that they had been abandoned while fresh.

The trees, with complement of leaves,

That made a verdant screen,

Are now but slender silhouettes,

That frame the views between.

—Emma Peirce.

It is a wonderful little magazine, and I always look forward to its arrival.—Kenneth F. Cooper, Owego, New York.

TO KNOW THE STARRY HEAVENS

The Heavens in December.

By Professor Samuel G. Barton of the University of Pennsylvania.

VEGA, the brightest of the summer stars, is now in an inconspicuous position in the northwest (at A, Figure 1), while Sirius, the brightest of the winter stars and the most brilliant of all, is just appearing in the southeast at B, accompanied by many other bright stars. Cygnus, the

head. This constellation is often identified by its resemblance to the letter W. It represents a woman, Cassiopeia, seated on her throne. In this part of the sky we find constellations named for Cepheus, mythological king of the Ethiopians, Cassiopeia, his queen, and Andromeda, his daughter, who was

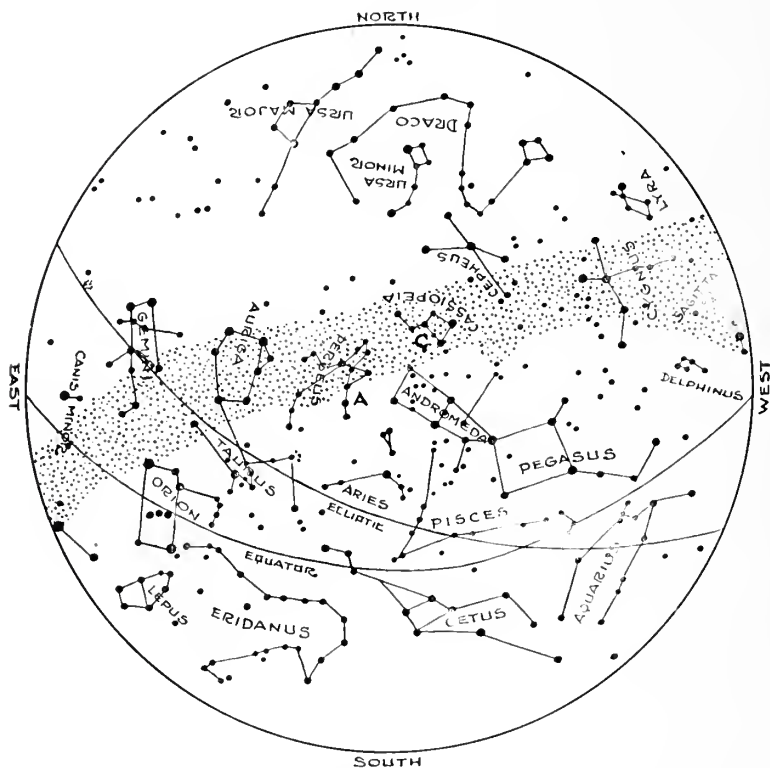


Figure 1. The constellations at 9 P. M. December 1. (Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.)

northern cross, now stands in its natural upright position in the west. The dippers in the north are in unfavorable position. Cassiopeia, which lies on the opposite side of the pole from the big dipper (Ursa Major), is nearly over-

chained to the rock to be devoured by the sea monster, but who was happily rescued by Perseus. Rescuer and rescued married, of course, and we suppose lived happily afterward. They are placed as adjacent constellations.

Cassiopeia had compared her beauty favorably with that of the sea nymphs. They were so indignant that they sent the sea monster. When Cassiopeia was honored by being placed in the sky as a constellation her enemies, the sea nymphs, succeeded in having her placed near the pole so that half of the time she would be turned head down in humility.

The constellation is often called Cassiopeia's Chair. If we look at the stars we can imagine that we see the form of

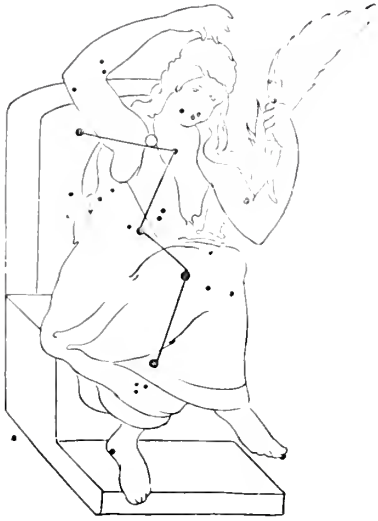


Figure 2. Queen Cassiopeia seated on her throne.

the chair on which Cassiopeia sits (the top of the chair turned toward the pole). But, as often happens in such cases, when we examine the figures as they have come to us from ancient times we see that the real chair bears no resemblance to the one we have picked out, nor to any other arrangement of the stars.

The star, Eta Cassiopeiae, at C, Figure 1, is a very interesting double star. It consists of a bright orange-colored star with a fainter one close to it of a purple color. Purple is not a common color among stars. The contrast makes this among the most interesting colored double stars in the whole sky. Unfortunately, it is not seen well with small instruments. This star is more than a double star; it is a binary star—that is, a double star whose members, or components as they are called, move about each other's orbits. The revolution in the orbit requires about three hundred

years. This star is one of about a dozen binary stars whose distances have been fairly well determined. When the distance and the period are known we can use the law of gravitation to determine other facts about the star. Eta Cassiopeiae is found to be about sixteen light years away, say ninety-three trillions of miles; that is, a million times as far as the sun. This means that it is among the nearer stars. From this distance we learn that the stars are 47.4 times as far from each other on the average as the earth and sun; that the two stars combined are 1.2 times as massive as the sun and that they give out 1.4 times more light.

* * * * *

The Winter Solstice.

The sun is farthest south December 22, 4:08 A. M., Eastern Standard Time. On this day the sun gives least light and heat to those north of the equator. To the whole earth it gives nearly the greatest amount, as we are closest to the sun at this time of the year. At this time winter begins. This is the shortest day and on this day the sun rises farthest south of west and is lowest in the sky at noon.

Three days after the solstice we celebrate Christmas. The two events are related. Feasts were held in celebration of the winter solstice by many peoples as far back as can be traced. This was quite natural, as this event marked the turning point from cold to warm and from death to life in the vegetable kingdom. When there was a desire to celebrate the birth of Christ, disputes arose as to the date of his birth and various dates in widely different parts of the year were selected as the proper time for the celebration. The present time was eventually chosen largely with a view of conciliating the pagans who had been accustomed to the solstice celebrations at this time. The first authentic document which assigns December 25 as the date of the birth of Christ was written A. D. 354, stating that "year 1 after Christ in the consulate of Caesar and Paulus, the Lord Jesus Christ was born on December 25, a Friday and the 15th day of the new moon." No celebration is mentioned. It may be noted that December 25, A. D. was Sunday and not Friday.

The Latins held a feast for Mithras,

their sun god, on December 25. This was called the feast of the unconquered sun, referring, of course, to the change in the motion of the sun. Those who celebrated January 6 as Christmas accused the Romans, who adopted December 25, of sun-worship and of deliberately and arbitrarily selecting this date. This seems very probable, as analogies between the birth of Christ and the creation of the sun are found in the language of the sun. Christ was called the "true sun" and "our new sun," for instance.

If sun-worshippers have not fixed the date of Christmas itself they have at least had much to do with the character of the celebration. Yule was a name applied to the months of December and January, before and after the winter solstice. The name and the Yule log associated with it have become attached to Christmas. The mistletoe of the Druids and the candles, also relics of heathen festivals for the sun, have become attached to Christmas. Because of its pagan associations the Puritan Parliament of 1644 forbade the celebration of Christmas, a view still shared by some sects.

* * * * *

Eclipse of Algol.

None of the naked eye planets are visible in the early evening. Algol, the eclipsing variable star, at A, Figure 1, will be eclipsed December 8, 11:49 P. M., December 11 at 8:39 P. M., December 14 at 5:27 P. M., and December 30 at 10:20 P. M.

The Barritt-Serviss Star and Planet Finder.

Here at ARCADIA we are convinced by the frequent use of the Barritt-Serviss Star and Planet Finder, that it is by far the best thing of the kind that has ever been put on the market although we are familiar with a number of other makes that have been sent to us. The Barritt-Serviss map is simple, attractive in appearance, and practical. For descriptive circular address Mr. Leon Barritt, Publisher, Arbuckle Building, 367 Fulton Street, Brooklyn, New York.

Mr. Barritt also publishes "The Monthly Evening Sky Map," which is in no sense a competitor but a welcome companion with our own monthly department devoted to stars and planets.

Great Merit in Relativity!

One nice thing about the theory of relativity Dr. Einstein explained to the New York reporters. Asked what he would advise the layman to do about the theory, he replied, "Nothing at all; tell him not to worry; it won't hurt him." This is not only reassuring, but it is one of the most transparent statements so far made concerning the theory.

To our mind, in times like these, anything that we should do nothing about, that we should not worry over, and that won't hurt us, is entitled to the highest place in human estimation. There are so many of the other kind of things that the theory of relativity shines out like a beacon light in an unusually dark night. If Dr. Einstein could now find something else we do not have to do anything about, then there would be two of them, and relativity might not be so lonesome.—Springfield Union.

One of the strangest, most poetic phases of the relation between the great blue mountains and the great blue sea is that waves, as they approach the shores of continents bordered by mountain ranges, rise higher and higher; and the higher the mountains, the higher rise the waves. These waves are not driven by wind or tide but seem drawn forward by some strange power. This power, however, is no stranger than the one that makes us fall and bump our noses when we stub our toes—the power of gravitation, according to which all masses attract each other. It is the mass in the mountains that exerts a pull on the waves; and the greater the mountains the greater the pull, of course. In the Indian Ocean, for example, around the head of the Arabian Sea, the waves rise far above sea level, largely because there is beyond them, on the land, one of the greatest mountain masses in the world.—Hallam Hawksworth in "The Strange Adventures of a Pebble."

But if I may not so attain to this side of nature for the clog of chilly blood about my heart, may the country and the streams that water the valleys content me, and lost to fame let me love stream and woodland.—The Georgics of Virgil.

CORRESPONDENCE AND INFORMATION

Nature Notes from Cedar Heights.

Stamford, Connecticut.

To the Editor:

My eyrie home, surrounded by nature, "and nothing else," gives me some advantages in watching the birds, etc. I have watched often a bevy of crows annoying a hawk, chasing him from tree to tree, cawing at him and making feints to strike him, but paying great respect to the reach of his sharp beak and claws.

Usually the hawk sits in silent scorn waiting for the crows to tire out and disappear. But recently I saw a hawk scatter a big flock of these black teasers by the sheer force of his angry onset. Evidently the crows were pestering one hawk near by in the woods when its mate, losing patience, started from a distance, and flying rather low over me, scattered the whole black flock by his furious charge. I think I never saw a bird fly so fast, probably seventy miles an hour at least, and he screamed with terrifying anger as he went, straight as a rifle bullet, at the bunch of crows.

Another phase of bird life, a peaceful and beautiful phase, was when hundreds of crows and starlings took a notion to stage an aerial dance together. Both birds will often gather by themselves in flocks and go through graceful evolutions, gyrations and spirals, but this time the crows and starlings rehearsed together, the smaller and the larger birds cutting across each other's orbits in a most beautiful aerial dance, somewhat as if a whirlwind had caught a few thousand leaves, large and small, and whirled them aloft in intermingling circles.

CHARLES H. CRANDALL.

Remarkable Snake Story.

Cincinnati, Ohio.

To the Editor:

When I was between the ages of four and eighteen years, I spent every summer on a farm in Clermont County,

Ohio. My hobby was guns and I was always prowling around the creeks, woods and places where animals and reptiles abound. One sunny afternoon I and two other boys were walking up the creek hunting green frogs when I came upon two dead water moccasins (snakes). One had swallowed the other for I could see the tail sticking out of the mouth of one. I pulled out the snake, making note which one had done the swallowing, and the smaller snake had swallowed another snake four inches longer than itself. I surmised that they had been fighting and the little one had been the more fortunate; therefore one was smothered and the little one choked by the tail of the larger.

This piece of narration is poor, but I assure you my story is absolutely true as well as my observation. If this is anything new to you—which I doubt—I am only too glad.

Yours respectfully,

ALFRED R. HILL.

The Moose Hill Bird Sanctuary in Sharon, Massachusetts, last year registered nearly three thousand visitors, as against thirteen hundred the year before.

The Youthful Fir.

Arrow-straight it stands among

The spruces on the ledge,

Where rhythmic roll of waves is heard

Just below the edge.

A striking contrast are its leaves

And smoothly rounded bole,

With balsam blisters through its length,

Of which we take our toll.

And at the top, in contrast, too,

The tall, upstanding cones,

(With sparkling nectar brimming o'er)

In deeper, purplish tones.

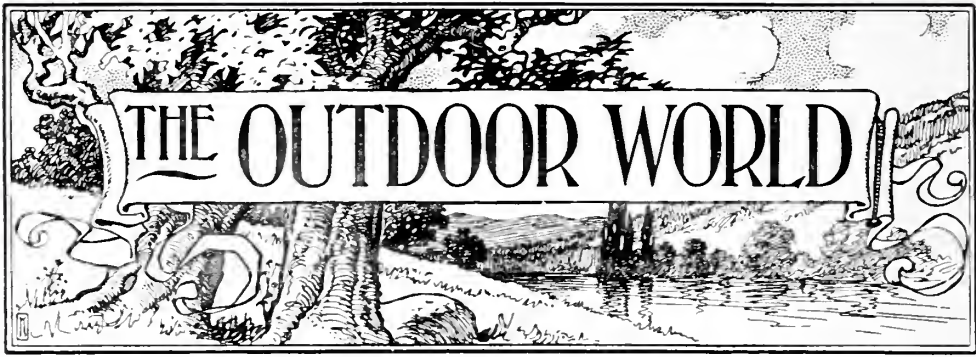
One of a goodly company,

Crowning the cliffs with green,

And making this far northern shore

Among the fairest seen.

—Emma Peirce.



Seeking Thoughts in Nature.

In those charmingly girlish articles by Opal Whitely that attracted the world's attention when originally published in "The Atlantic Monthly," Miss Whitely said that she was looking for thoughts in nature. That is a charming idea and one that is more commonly held by both boys and girls than we older persons are likely to realize. The child always wants a story or to make one. Those who are familiar with the astonishing popularity of "The St. Nicholas League" for the past quarter century have been more and more impressed by the fact that children, girls especially, like to be literary producers. We have perhaps been too active in entertaining the child with reading stories and too little in having the child produce her own stories.

Then too, among older people, those who have gone to nature for thoughts have gotten at the real heart of things, and some of them have so thoroughly thought out matters that they have made themselves immortal. We are familiar with the classic statement by Thoreau that he went out to Walden Pond and built a hut in which to think. His fame would not have extended beyond his own day and neighborhood if he had gone there only to swim and fish. It is his thought, his ideals, even if we do not always agree with him, that have made him beloved for all time.

Who cares how many fish Dr. Van Dyke caught, the size of any one of them? He might have certified to the physical size and quantity of his fish before all the notary publics and he would not have endeared himself to the fishermen everywhere as he has by his "Little Rivers."

It was not fish that Izaak Walton

caught. It is what he thought while he was catching them that has for all time made his name a synonym for a good fisherman. It is thought that gives joy as well as pain. Mind is superior to matter.

What caused the modern high grade camp to spring into its present well deserved popularity? Not merely a continuation of the old-time sportsman's or family camp where it was only a matter of a gun, a rod, a frying pan and a bed of hemlock boughs. It was the interpolation of the literary element. Writers not fishermen have made fishing popular, and magazines and books dealing with rod and gun have spread abroad the present day enthusiasm. When we look for thoughts we are seeking something more enduring than material things as well as more inspiring.

Prominent among all the camps that place thinking among the chief joys is Kineowatha. On the hills, in bungalows, in country roads and mountain climbing, in groups on the haymow and on the big rock at the top of the hill, have been evolved by these enthusiastic girls poems and songs and descriptive articles that would do credit to a city's literary workshop.

Unaided but not uninspired by enthusiastic, cultured councilors they have in joy produced articles that have made the "Kineowatha Kamper" a famous camping magazine. The managers appreciate the possible literary value of a good vacation for July and August, and print the magazine in fine form. Its contents are not forgotten as in many camps. The literature produced by these girls is one of the charming inspirations of the camp.

At the end of the year the weekly issues of the "Kamper" are bound with

an attractive cover and illustrations into an attractive volume. One reads these poems and songs with a feeling. Is there anything supernatural about these hills of Wilton, Me., or any unusual genius in the girls? It is both. The environment has much influence, but the associates have more. There among cultured men and women the girls are encouraged to give expression to their own individual talent. They receive the expression of appreciation from their associates, the kind of commendation that we all value.

To receive an unabridged dictionary at the end of the school year as a prize for some essay is not nearly so thrilling as suddenly to hear a song sung by the whole Pow-wow when that song comes fresh from the heart of some enthusiastic fellow camper. The girls surprise themselves, to say nothing of the camp managers and the parents. Can it be possible that my Susie, Julie or Emma wrote that poem? Why, that essay surpasses anything we have ever seen produced in our school!

You are right, father and mother. It is not written for the sake of writing but for the sake of expressing. The girl feels the song and the poem. The environment is inspiring. It is feeling not form that makes good literature whether it is in "Kineowatha Kamper" or Walt Whitman's brag of self. One overlooks personal idiosyncrasies, yes, one even delights in them, if accompanied by enthusiastic thought, if there is something vital to thrill and inspire the hearts and lives of others. Here girls are taught to find themselves. It is worth the time expended and the cost to obtain the literary expression alone of this camp. Many a girl has gone home feeling not only that she has discovered the paradise of nature, but a mine of literary expression within her own capabilities. Here the joy of self-expression and the grace of naturalness are given free scope and are encouraged to grow into all possible fullness.

For one-third of a century I have edited literature by young people, have encouraged them to write, have taught to that effect in the schools, yet I unhesitatingly say that some of the most charming of all literary expression, of all freedom from artificiality have been the articles, poems and songs published in "Kineowatha Kamper."

If you, father or mother, would like to know more of this kind of work, if you realize that personality as well as physique is what you want to develop in July and August camping, then get further particulars in this matter by writing or telephoning to Edward F. Bigelow, ARCADIA; Sound Beach, Connecticut.

To Readers of The Guide to Nature Who Are Not Members of the AA.

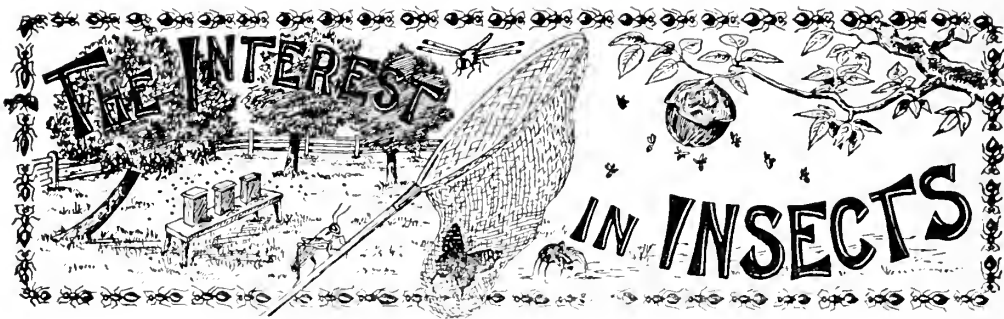
BY A MEMBER.

Those who are broad-minded enough to realize that "the world is full of a number of things" besides those which civilized man has invented, and know that an appreciation of natural objects does not necessarily imply a wishy-washy, sentimental view of those things should have enough interest in the progress of natural science to join The Agassiz Association.

The Agassiz Association is not a personal affair, it does not confine its interests along any special lines; it is essentially a naturalist's organization and its members are of all ages and study all branches of natural science. It seems to hold a place among scientific societies similar to that that John Burroughs held among scientists.

There is no red tape connected with a membership in The Agassiz Association. Every one picks out what he likes and lets the rest go. To join the Association merely proves the individual member's mind, and distinguishes the really interested from the half-hearted. It is not enough merely to read THE GUIDE TO NATURE. Any one who presumes to be a naturalist should be proud to be a member of so old and well established an association. Personal gain has never been the motive of the chief workers but a desire to help and to encourage those who are learning to like natural objects or natural science.

We cannot all devote as much time to these things as we might like to do, but at least, when we have found the intellectual pleasures and had our views broadened by what Burroughs called "the beauty and wonder of the world," we should aim to interest and awaken others. A pleasure shared is doubled. Let us pull together. Our bit is more effective when used through an agency like The Agassiz Association.



Curing Chronic Rheumatism With the Sting of Bees.

BY J. R. SCHMIDT, IN AMERICAN BEE JOURNAL, HAMILTON, ILL.

That rheumatism can be cured by the sting of the honeybee is the firm belief of George Renner, of Cincinnati, who is taking this novel treatment to eradicate the disease from his system.

Each Wednesday and Sunday morning Mr. Renner visits the apiary of Fred Muth and submits to being stung by the honeybees. At first, when Mr. Renner could just hobble along with the aid of crutches, as high as ten stings were the strenuous treatment, but now Renner can walk without the aid of a cane, and only two stinging bees are applied twice a week. This novel treat-



APPLYING A HONEYBEE TO CURE RHEUMATISM.

ment, painful as it may seem, is a welcome relief for the incessant pain of the rheumatism.

"At first the sting of the bees was very painful to me and the swellings resulting from the stings were great, but as my system gradually became inoculated with the poison from the stings the pain and swelling grew less

Poetic and Rheumatic.

Not every "estate" with a poetic or romantic name squares up to its cognomen. One case in point is that of a beautiful estate in Orange County, N. Y., which the gentle bred wife of the new owner christened "The Birches," because she admired the name. But there was not a birch tree on the prop-



A "CLOSE UP" VIEW OF THE STINGING.

in proportion, I can now take the stings without flinching and feel very little pain at all. It certainly is curing me."

Fred Muth explains the strange cure this way: "It is a well-known fact that the sting of the honeybee is made painful by the formic acid which enters the wound when the bee stings. This acid is contained in a tiny little bag attached to the thick end of the stinger. When a honeybee stings, this little bag of acid and the surrounding muscles break away from the body of the bee and the bee flies away and dies, while the sting, propelled by the adhering muscles, sticks into the flesh and keeps on imbedding itself deeper and deeper, at the same time pumping the formic acid into the wound. Physicians have found that formic acid counteracts rheumatism, and when introduced into the system, in many cases, causes a cure. Allowing one's self to be stung by the honeybees is introducing formic acid into the system, which in turn counteracts rheumatism.

Copper was mined during the war at Blue Hill, Maine.

erty, and although thousands of dollars were spent in an endeavor to propagate a grove of birches on the premises to make it fit the name, it all came to naught — the birches would simply neither grow nor live there.

Professor Walter King Stone, the artist, who fills a chair in the art and architecture college of Cornell University, and spends his summers at his country place, "Twin Doors," near Canaan, Conn., believes in observing the proprieties in bestowing a name. He has just purchased a residence in Ithaca, N. Y. A brook runs through the rear of the grounds, and Mr. Stone is considering the idea of calling his place "Lumbago," on account of the "creek in the back."—The Greenwich News and Graphic.

A little cloud-ladder runs up to the blue.
Oh, would we could mount it, and take a
peep through
To where stars and planets their lone vigil
keep
Above us through sunshine as well as
through sleep.

—Emma Peirce.

An Educational Apiary Smashed.

BY EDWARD F. BIGELOW, ARCADIA, SOUND BEACH, CONNECTICUT.

The educational apiary under the management of The Agassiz Association at ARCADIA, Sound Beach, Connecticut, has met with a serious catastrophe. In the heavy storm of September 30 the cable fastenings that held together two parts of a huge oak broke and the smaller part, some two feet in diameter at the base, crashed to the ground, crushing about a dozen hives. Fortunately only about half of the outdoor hives came within the area of the falling limb and the near-by apiarian laboratory was untouched.

The oak tree is one of the largest in the vicinity, measuring eleven feet in circumference. Something like three hundred dollars has been spent upon it in cavity work, bolting and cabling. It is a relic of the days of the Indians and of later years when there was not the appreciation of trees that has been brought about by The Agassiz Association and other organizations in more recent times. For something like a hundred years, perhaps more, ending about half a century ago, there was near this tree a pond. In the wintertime skaters built bonfires under the tree sometimes on one side of the trunk and sometimes on the other. In the summertime came picnic parties of clam diggers that judging from the cartloads of clamshells must have diligently feasted for many years. The result was that the trunk of the tree actually had clear through it an excavation tunneled by fire.

With the coming of The Agassiz Association to this picturesque spot ten years ago efforts were at once made to retain the tree and barring the recent disaster the efforts have been successful. The main part of the tree is still standing. In no part of the country could there have been obtained a more picturesque place for an apiary and the one here located has become known the world over. Several leading concerns in motion pictures have here taken pictures. Still photographs innumerable have been published in various bee and other journals. The apiary

has had the hearty cooperation of The A. I. Root Company and of local beekeepers. It is used wholly for educational purposes, the honey produced being given away. Last year eight hundred pounds, mostly in sections, were distributed among students, friends, and visitors to ARCADIA.

All over the country I have demonstrated the handling of honeybees without glove or veil, and have done so many, many times in this apiary. But here was a situation to try the strongest of nerves and the greatest of faith in kindly methods of dealing with honeybees. A number of the hives, some with three or four supers, some with extra stories, were crushed, and others, standing on foundation boxes for convenience in handling, were completely overturned. The difficulties of the situation were increased by the fact that it occurred near the end of the honey flow and the bees were ready to rob, in fact they had nothing else to do. The result was bedlam let loose. There were bees everywhere—to the right, to the left and in front and in back, to say nothing of overhead, and they were as mad as yellow jackets. Owing to the difficulty of getting in among the limbs a veil was not much assistance but almost a hindrance. I had to cut my way to the crushed and overturned hives amidst an army of swarming, fighting bees. Within two hours, however, I had all but one of the hives under control and that one had to fight it out for itself until I could take time the next day for the more laborious work of cutting a path to that.

The catastrophe was announced in the local papers and the scene of action was visited by a number of people. Mr. L. C. Root, the veteran beekeeper of Stamford, Connecticut, said that in all his experience he had never even heard of such an occurrence. Presumably no great amount of honey was actually lost to the apiary as a whole but an immense amount most certainly "changed hands" in a very short time and the depredations were not entirely stopped for nearly a week.

Beekeepers often know of the terrors of a swarm of bees tipped over by a cow or horse but think of several prosperous colonies turned over at such a critical time as a warm day just at the end of the honey flow.

ARCADIA

The Tendency to Dance in the Woods.

The modern schools of dancing, such, for example, as the Noyes School of Rhythm in New York City, by holding their summer session in the wilds near Cobalt, Connecticut, have based their success on a fundamental element of human nature. Buried in the heart of almost every one is the principle of the fairy, elfin or sprite. We all like to wander like the will-o'-the-wisp when we enter the woods.

That innate element of human nature is clearly brought out by John Muir in "The Mountains of California:"

"Our guide, a jolly, rollicking Italian, led us into the heart of the hill, up and down, right and left, from chamber to chamber more and more magnificent, all a-glitter like a glacier cave with icicle-like stalactites and stalagmites combined in forms of indescribable beauty. We were shown one large room that was occasionally used as a dancing-hall; another that was used as a chapel, with natural pulpit and crosses and pews, sermons in every stone, where a priest had said mass. Mass-saying is not so generally developed in connection with natural wonders as dancing. One of the first conceits excited by the giant Sequoias was to cut one of them down and dance on its stump. We have also seen dancing in the spray of Niagara; dancing in the famous Bower Cave above Coulterville; and nowhere have I seen so much dancing as in Yosemite. A dance on the inaccessible South Dome would likely follow the making of an easy way to the top of it."

We find at ARCADIA an interesting confirmation of the predominance of the spirit of dancing over the religious element. We built our Welcome Reception Room in the form of a chapel with an electric Swiss Cross in the ceiling, intending it for meetings of students and visitors in the spirit of our

large motto on the wall, "Per Naturam ad Deum." Several churches and Sunday schools have held sessions there, but no stranger entering the room for the first time has ever spoken of its religious aspect, but almost invariably said, "What a lovely place to give a dance," although it is not fitted up like a dance hall and is not such, but has rugs on the floor and a center table with books.

In more recent years we have built Little Japan, designed for similar purposes and emphasized by the Japanese sacred emblem of a torii. As the groves were God's first temples the grove seemed a good place in which to bring out the religious idea of nature study, yet the remark of the stranger is, "What a lovely place to have dances. I suppose you have them frequently."

During the several years that we have used the equipment, there has been only one occasion in Little Japan when dancing was a prominent feature. We are hoping to be surprised some day by the remark, "What a lovely place for a vesper service as the setting sun is casting long shadows under the trees."

Where Do Automobilists Go and What Do They See?

In "The American Magazine" for September, George Ade has an article brimful of humour and philosophy on the modern rush of things as typified by the speeding automobilists. In a fine burst of humor Ade tells us how to get acquainted with a town on short notice.

"Don't annoy the postmaster and don't go near the bank. The banker will think that you want a check cashed. Drive right into the heart of Main Street and pull up in front of a red-white-and-blue pole. The barber is the lad for you. He is always sociable, and he can immediately put you in

possession of the local traditions and scandals. If there is anything in the whole countryside worth visiting he can give you the needed information, surrounded by details.

"Tell him that as you drove in through the residence district, you were more than favorably impressed and that you have stopped off for a visit—and what is there to see? He will immediately submit a list of attractions, which may include the Carnegie Library, a blind pig, and a milch cow that took first prize at the state fair.

"Or, better yet, he will ask Elmer to finish the man he is shaving, and he will put on his coat and take you out to meet the town celebrity. It may be the old soldier who gave General Hooker a lot of good advice at Lookout Mountain, or the woman who has been working twenty-two years on a patch quilt which will eventually have seventy-five thousand pieces of silk in it. Or he may want to show you the birth-place of the man who played the slide trombone with Sousa's Band for seven years."

In humor and philosophy the make-up man has kept pace with the author. Here are three of his titles descriptive of three photographs:

"This is the road that passes George Ade's country place, Hazelden, in Indiana. He declares that the motor speedmaniacs streak by in clouds of dust, unable to see anything, except the roadway, the speedometer, and the undertaker."

"These are the charming gardens at Hazelden. When Ade found that the guide books had advised tourists to stop and ramble through his grounds, he thought he would be swamped with visitors. But not a motor pauses in its mad flight."

"This is the Hazelden golf course, where George Ade pauses in his play to watch the speed fiends shoot past. They never see *him*, however, or the golf links, or the clubhouse, or anything. Their cervical vertebrae have become locked and they cannot turn their heads."

We wish the famous author had called at ArcAdiA before he wrote his article. We could have given him several pointers, notably one of a woman who had been passing by on Arcadia Road for several years, but had not

seen our institution. A skillful writer like Ade could have written something worth while if he had known about the two business men who rushed into the office and shouted, "We have heard about ArcAdiA and have fifteen minutes in which to see it before we catch the train. Hurry, and let us do it as quickly as possible."

In a leisurely way the manager looked at his watch. "So," he said, "you have fifteen minutes in which to do two things. You cannot do both in that time and I judge that to you catching the train is the most important. Do it."

The many witch-hazels of large growth are now in luxuriant full bloom at ArcAdiA and are attracting much attention. Probably in no other place either wild or cultivated in this part of the state can witch-hazel be seen in bloom to so good advantage. Several years ago Dr. Bigelow set out a large number of these shrubs in memory of his boyhood days in Colchester, Connecticut, when he roamed the woods as hunter and trapper and nature student. Some of these shrubs have now grown to a height of twelve feet and in their broad expanse are much more effective than they are usually in the wild woods. They often continue in bloom until after the middle of December and may well be called the last flower of the year.

The Connecticut Construction Company has just completed the liberal amount of rustic work that they began a year ago in Little Japan. This final touch has been given to the new Annex completed this spring. Rustic work has also been supplied in liberal amount for the Alcove in Nymphalia and for some other parts of ArcAdiA.

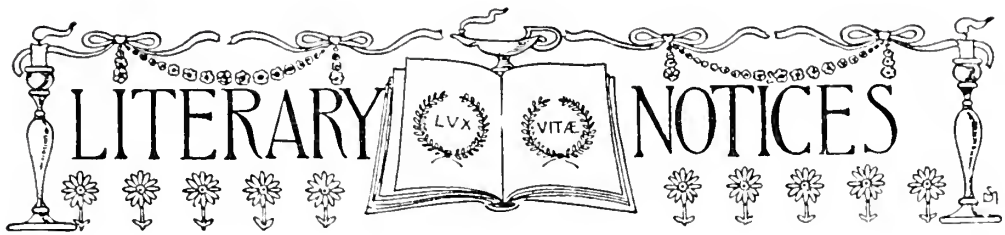
The November Wood.

The wood is revealing its secrets
Since screening leaves have flown,
And giving to us with abandon
What it held for its very own.

For even exuberant summer
Vouchsafed us but a part,
But now, almost with reverence,
We gaze into its heart.

—Emma Peirce.

The largest single crystal of apatite ever found in Maine is valued at five hundred dollars.



LITERARY NOTICES

FISHES IN THE HOME. By Ida M. Mellen. New York City: New York Zoological Society.

Small fishes may be made available for nature study in any home. This handbook, beautifully printed and with many attractive illustrations, tells the whole story. We cordially recommend it to our readers who wish information regarding home aquaria. In a way everybody loves an aquarium but comparatively few know how to manage it, as is evinced by the large number of small globe monstrosities that find a ready sale in many stores. A thing that is worth doing at all is worth doing well. If you like to have fish in the home get this handbook and do the work well. Do not make the aquatic pets miserable by a lack of proper care and of proper surroundings.

NUT GROWING. By Robert T. Morris. New York City: The Macmillan Company.

Our local readers will be especially interested in this book because Dr. Morris is so well and favorably known in this vicinity not only as a surgeon but as an enthusiast in growing nuts at his picturesque farm in the northern part of Stamford. He has told the story in his interesting, philosophic style but with every practical detail.

Nuts supply all essentials of human food and are coming into more general use. Nut trees promise to become an important part of the new agriculture. So eminent a physiologist as Dr. Kellogg advocates nuts as a staple of human diet. Dr. Morris explains the possibility of an extension of this line of food supply. Especially valuable is his description of methods of nut tree growing which avoid the difficulty of grafting and are applicable to all sorts of tree grafting.

THE SALVAGING OF CIVILIZATION. By H. G. Wells. New York City: The Macmillan Company.

Not only because Mr. Wells has come into special prominence with his much discussed "Outline of History" but because of its merits as a study of what the human race is doing, this book is interesting and important to the general reader, particularly from the human evolutionary aspect. Not all of us have the pessimistic fears that trouble Mr. Wells and induce him to believe that we are going to be shipwrecked as a race, but all of us will find it interesting and beneficial to look upon both sides of the question. Mr. Wells tenaciously supports his side of the argument. His heart is in the subject. He has produced interesting reading. His advocacy of historical literature for the safety of the human race is indeed a notable com-

pliment to the value of letters. He puts almost the entire stress of salvaging upon what he calls the coupling up of our present Bible with other good literary material so as to make an enlarged "Bible of Civilization."

AMERICAN BOY'S BOOK OF WILD ANIMALS.

By Dan Beard. Philadelphia and London: J. B. Lippincott Company.

What can be more fascinating to the real boy than wild animals? He is always eager to get out where some of them have their haunts. Dan Beard in his latest addition to the Woodcraft Series offers the next best thing to a trip into the wild itself. His new book is filled with incident and adventure—stories of bears, wild cats, deer, opossum and all the small furry things that dash and scamper away at the sound of man's approach.

The author is National Scout Commissioner for the Boy Scouts of America and, next to Sir Robert Baden-Powell, there is probably no man who is in so close touch with the work of this organization or who has a wider knowledge and greater love of the wild, its ways and its denizens. He has the gift of being able to make real and interesting to youthful readers all the things which he writes about with so much enthusiasm, and it is through this gift that his previous books on woodcraft have gained so widely in favor among those who are to become the best in national manhood.

Uncle Dan has spent most of his life in the open; his experiences with wild animals have been numerous; some of them exciting; the most interesting of these are told as only the author knows how.

A BOOK ABOUT THE BEE. By Herbert Mace. New York City: E. P. Dutton and Company.

We hail with delight this interesting book. It goes directly to the natural history of the hive and is therefore in perfect harmony with the spirit of this magazine. The author says and we heartily agree with him:

"Out of a list of thirty-five 'bee books' which I have looked over, no less than twenty-eight are practical handbooks. Five are highly scientific works, and the other two are almost of a metaphysical nature, in that the bees are only used as a peg on which to hang a dissertation on human life and conduct.

"Everyone does not want to keep bees; few people feel intensely interested in detailed descriptions of the internal anatomy of the insect; while it is not every reader who is pleased, on getting half-way through

a book about bees, to find that under the sugar coating of a peep into the wonders of Nature is a pill designed to remedy the evils of Society. These are all legitimate works, very good and useful to those who need them, but, if one may judge from the interest shown by one's friends and neighbours when the subject of bees is introduced, a plain account of the life and death of the busy occupants of the darksome hive would be more readily welcome."

The Forest Service, United States Department of Agriculture, reports that no less than thirty-three states have now provided for some sort of forestry activities and twenty-five of these share in the federal cooperative forest protection fund, allotted to states maintaining an effective fire detection and suppression system.—Science.

From Miss Fannie A. Smith, Private School, Bridgeport, Connecticut.

"Our Alumni and teachers realize how fortunate they were in being able to hear such an unique and inspiring talk as Dr. Edward F. Bigelow gave us at our annual Alumni Meeting. We sincerely hope to have the pleasure of hearing Dr. Bigelow again in the near future."

Mrs. Dow's School, Briarcliff Manor, New York.

November 5, 1921.

Dr. Edward F. Bigelow.

Sound Beach, Connecticut.

My dear Dr. Bigelow:

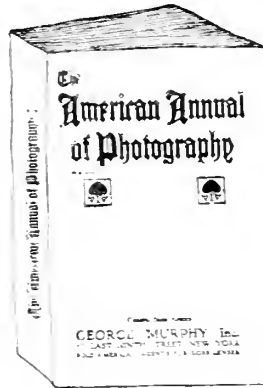
In your visits of the last three years to Briarcliff I feel that you have done much through your excursions with the girls, your walks and your lectures with the lantern slides to develop in them a love of nature and the wonders of outdoor life, but your lecture last week with the microscope projections quite transcended anything which you have done for us heretofore. In fact it seems to me one of the most important scientific achievements that has come under my notice.

If you can reveal the secrets of the microscope to large audiences of young people as you did for us you will certainly be making a great contribution to scientific teaching. I wish you all success in developing your work along this line!

Yours very sincerely,

(Signed) EDITH COOPER HARTMAN.

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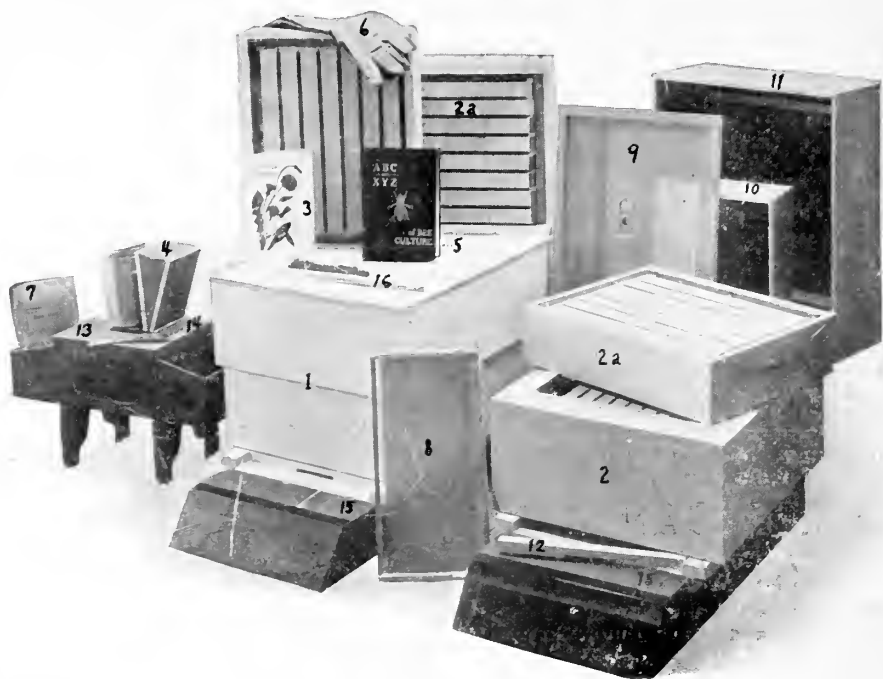
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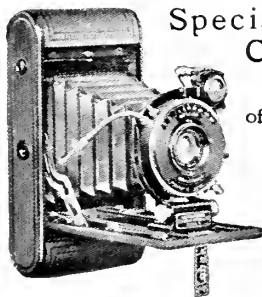


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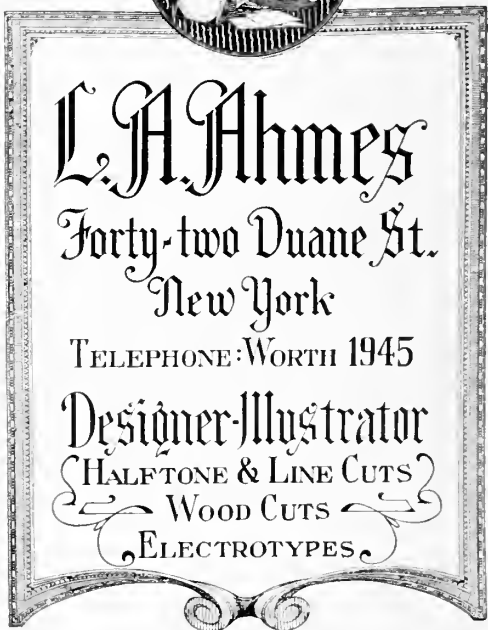


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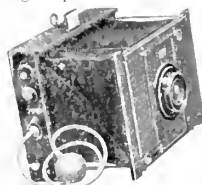
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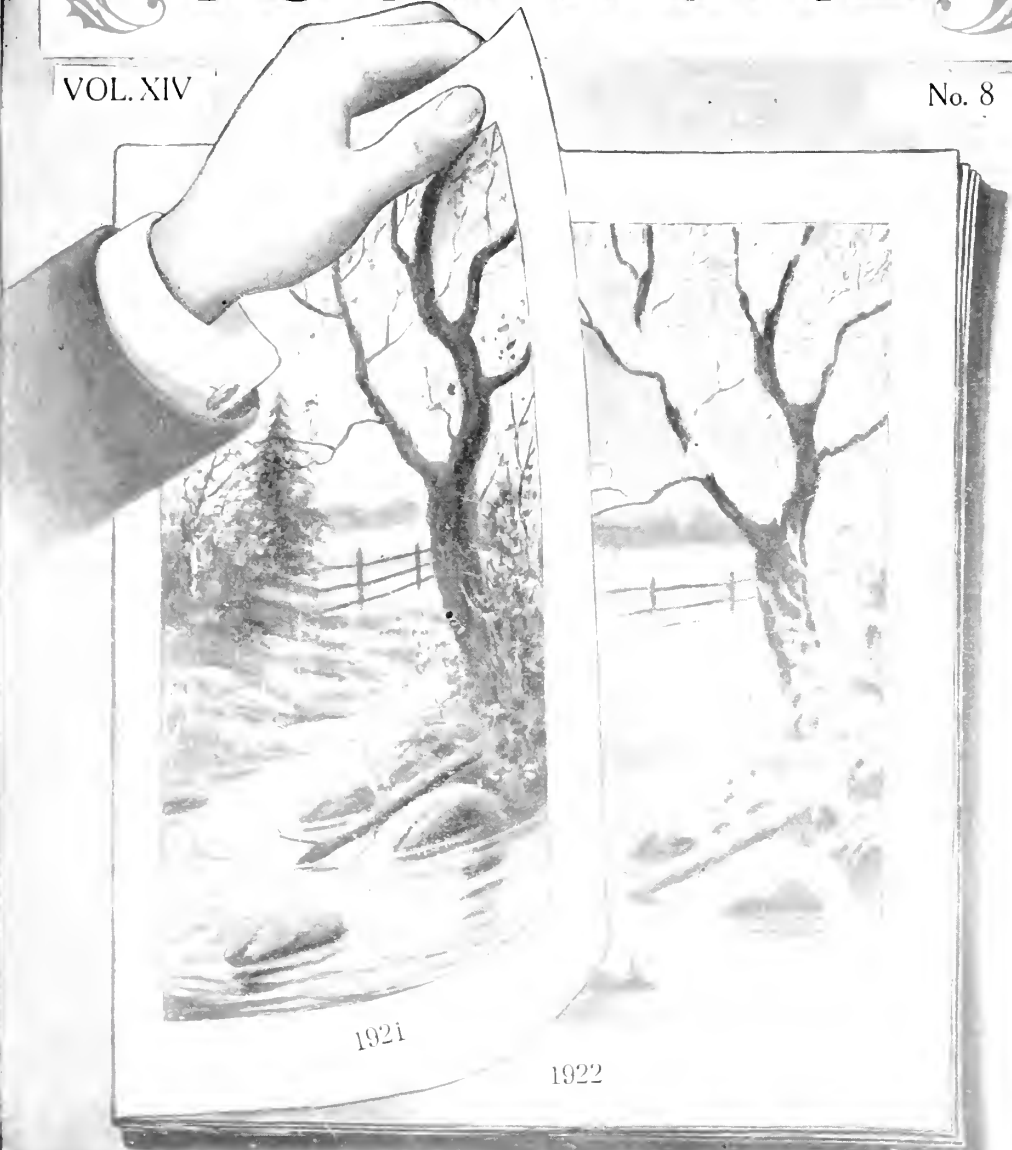
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VOL. XIV

No. 8



EDWARD F. BIGELOW, Managing Editor

PUBLISHED MONTHLY BY

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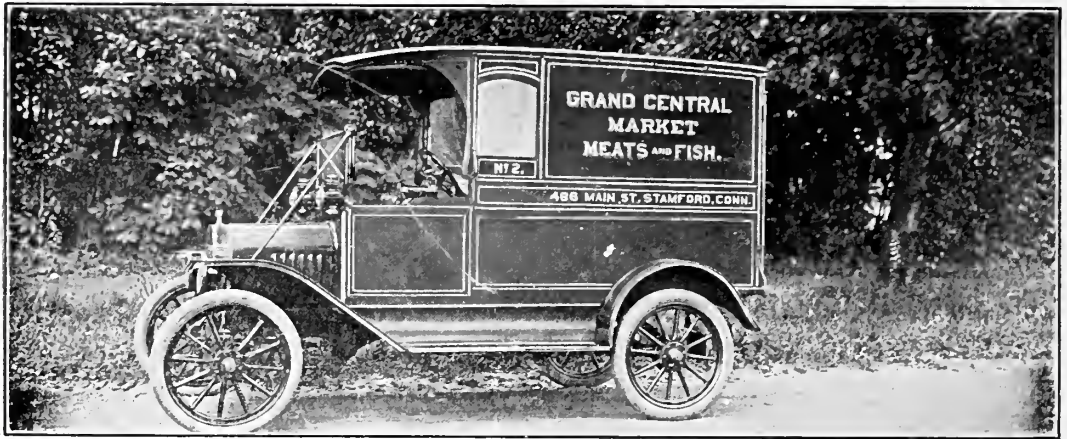
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"And for what purpose do they use the pouches?" continued the teacher, ignoring the slight inaccuracy of the reply. "I am sure you know that too."

"Yes'm," said Johnny promptly. "The pouches are for them to crawl into and conceal themselves when pursued."—The Youth's Companion.

Townly—"Do you often have to rush to catch your morning train?"

Subbubs—"Oh, it's about an even break. Sometimes I am standing at the station when the train puffs up and other times it is standing at the station when I puff up."—Boston Transcript.

Praise great estates, farm a little one.
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No one can write your book of Nature for you; you must do it yourself. She will never fail to inspire you; the light that shines across the fields, the wind that murmurs through the wood and the soft beauty that is blended in the depths of the distance are all waiting for your heart to open and take them in. Once you understand clearly that it is not what some one else has written about Nature that should guide you, but what you see and interpret yourself that matters, you are on the right road and your book has a permanent entry.—From a very interesting illustrated article by Frederick B. Hodges, "The Book of Nature," in "Photo-Era Magazine" (Boston) for June, 1921.

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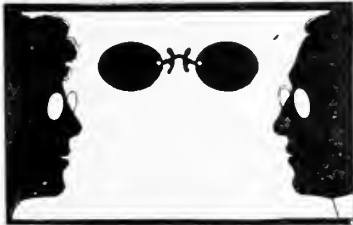
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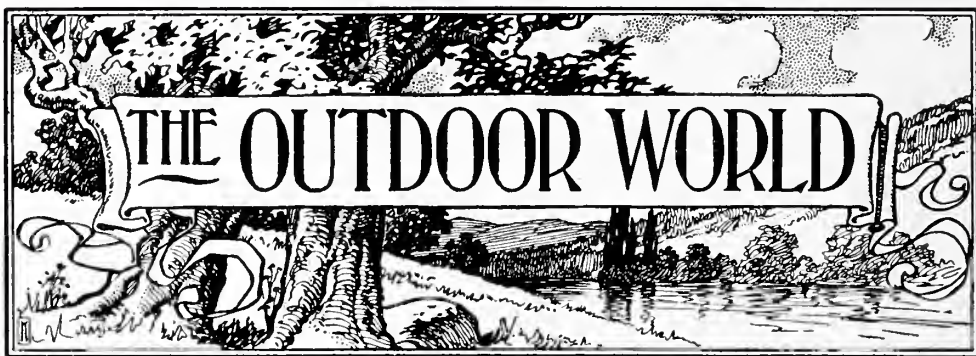
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Catching the Interests of Nature.

As long ago as I can remember I heard that mythical story many times repeated of the cat harnessed to a merry-go-round or old-fashioned cider mill, with a mouse dangling in front of her. All day that cat to capture the mouse pulled and pushed the merry-go-round attached in some way to a machine as John Burroughs's dog was fastened in a treadmill and did the churning.

I have many times pictured that cat tugging at that windlass in pursuit of that mouse. I do not believe a cat ever did anything of the kind, although by my skepticism I am spoiling a good allegory that, like many other allegories, does not meet the test when applied to the conditions of human life. We think the little story is delightful, and we sympathize with the cat because so many of us are chasing the unattainable or making water balls, those airy nothings that bubble to the surface when our emotional nature is touched.

Many well-meaning schools and equally well-meaning households portray nature study to children as the dangling mouse or as the will-o'-the-wisp floating just out of reach under the trees in the orchard. The teacher says: "My dear little child, isn't it delightful to think about? Isn't it beautiful to look at? Wouldn't you like to make air balls and run after the will-o'-the-wisp?" When I hear a song about the delights of the woods and fields, or a story about the wonderful antics of some animal or the peculiar maneuvers of a bird, or that romance about the fish that never was caught, I think of the mouse, the cat, the bubbles and the will-o'-the-wisp. Let us throw away these pleasing little tales, these imag-

inings, and seek the joyous light, and catch the elusive animals instead of dreaming about them. Go where they are and get into touch with them.

The best part of a fish story for a young person is to play at being a fish. Get into the water where the fishes are and dive and swim as they dive and swim. In all the world there is no other fishing like that.

What pastoral scenes have been depicted by poets and artists of the delights with Uncle Josh and Aunt Sue on the old farm. Their life is idyllic. How pastoral it is to follow the cows from the pasture and around the barn. Isn't it charming to ramble through the quiet meadows, by the rippling brooks, with the song of the meadow lark dropping from the sky? Pleasing little imaginings, aren't they? But the will-o'-the-wisp and the bubbles and the mouse keep their distance. Why read the beautifully illustrated magazines about country life; why read *THE GUIDE TO NATURE*; why not abandon the printed page and get the reality and make it your own?

That, parents, should be the modern realization of these dreams of the country in song and story for the child. Former generations dreamed about living in fairyland; modern young folks in a well ordered camp are perfectly at home there. All that the musician has told us of ringing rocks, the poet of the charms of the daisy and "wee little mousey," the sportsman of freedom from the cares of the city, the preacher in the pulpit of the glory of the firmament that sheweth His handywork, and of the satisfactions of living near to His works, are all realized when your boy or girl goes to a first-class camp. Through the ages a few God inspired men and women thought this but left

it for modern generations to accomplish. Said Wilson Flagg:

"Then will you feel that mankind are unhappy only as they wander from the simplicity of nature and that we may regain our lost paradise as soon as we have learned to love nature more than art, and the heaven of such a place as this more than the world of cities and palaces."

In a beautiful home on Riverside Drive, New York City, a little girl climbed on my lap as I sat in an arm-chair, while her grandmother sat at one side and her mother in front of me, and said: "Are you going to take me to where the fairies live? Are there truly tall trees out there, like I see in the picture books? Can you walk under them? Are there birds and butterflies too? Can I see them?"

"Yes," I said, "little Estelle," (this name is fictitious but the account is of an actual experience) "in three weeks you and I and happy playmates will for the first time go into that fairyland, and you may write to tell your mother and grandmother that fairyland is true." It was a joy to see the little child's soul leap into her eyes. Three weeks later the dream came true under tall trees. She who had left New York and the care of her parents had for the first time entered into the child's kingdom of happiness further and deeper than any adult can realize.

The child delights to read about fairyland and to think about it, but to realize it and to live in it is happiness beyond words. Little Estelle's experience I have seen repeated time and again and, father and mother, the fonder you are of that daughter the more you will want her to be another one of the great band of little Estelles. You can buy a book with beautiful illustrations of fairyland but, please, I beg of you, do not turn it into a will-o'-the-wisp, do not make it as tantalizing as that mouse before the cat, but make the beautiful fairylands of this world, as Whittier calls them, the real things of childhood and let your little Estelle enjoy every bit of the paradise while she may. It is better than the world of cities and palaces.

How shall you do this? Write, or telephone for a personal call, to Edward F. Bigelow, ARCADIA: Sound Beach, Connecticut, and he will tell you.

Holes Upside Down.

Two men were waiting for a train and one said: "I will ask you a question, and if I can not answer my own question, I will buy the tickets. Then you ask a question, and if you can not answer your own, you buy the tickets." The other agreed to this. "Well," the first man said, "you see those rabbit-holes? How do they dig those holes without leaving any dirt around them?" The other confessed: "I don't know. That's your question, so answer it yourself." The first man winked and replied: "They begin at the bottom and dig up!" "But," said the second man, "how do they get at the bottom to begin?" "That's your question," was the first man's rejoinder. "Answer it yourself." The other man bought the tickets.—*Boston Post*.

This alleged joke, copied from the "Boston Post" by "The Literary Digest," has been widely circulated. It is a revision of an old New England folklore tale that in the revision has from the natural history standpoint been badly damaged. There is earth around rabbit holes but none around chipmunk holes. John Burroughs calls attention to the fact that from time immemorial what the chipmunk does with its earth has been a moot question, but so far as can be ascertained the first explanation of the problem was made by THE GUIDE TO NATURE in an article published a few years ago in regard to a pet chipmunk. In February, 1909, Mr. Frank S. Morton, Portland, Maine, states the old problem and then explains:

"As I imagined it would be, the earth was a great source of comfort and immediately on being placed in it she would begin to dig. She made the earth fly so that I one day placed my hands at the side of the jar so that the earth would not fly over the room. She began packing the earth against my hands and was soon halfway to the bottom of the jar. It was then that I observed that after digging away the dirt with her fore feet like any burrowing animal, and throwing it under her body, she whirled around and began tamping and packing it away with her head, using it as a battering ram and packing in the earth at each side and when possible at the top. To further try her I placed my hands down

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over the pile of earth so that they formed sort of an outer covering to tunnels she was digging, and she continued packing the earth against my hands so that it formed a complete and solid tunnel, my hands holding it in place."

A curious fact is that the story has wandered around perhaps for centuries. I recall hearing it repeatedly told in my boyhood by persons who frequented saloons. It was a stock story, intended to put the bill on the other fellow. My grandfather, then over eighty, frequently told me he had heard the story in his boyhood from his parents and his grandfather, but invariably the chipmunks were the performers.

I can understand how, in these days of prohibition, drinks should become tickets, but what made the change from chipmunks to rabbits?

How to See Venus!

Posted in a women's college by instructress in astronomy: "Anyone wishing to look at Venus please see me."—Boston Transcript.

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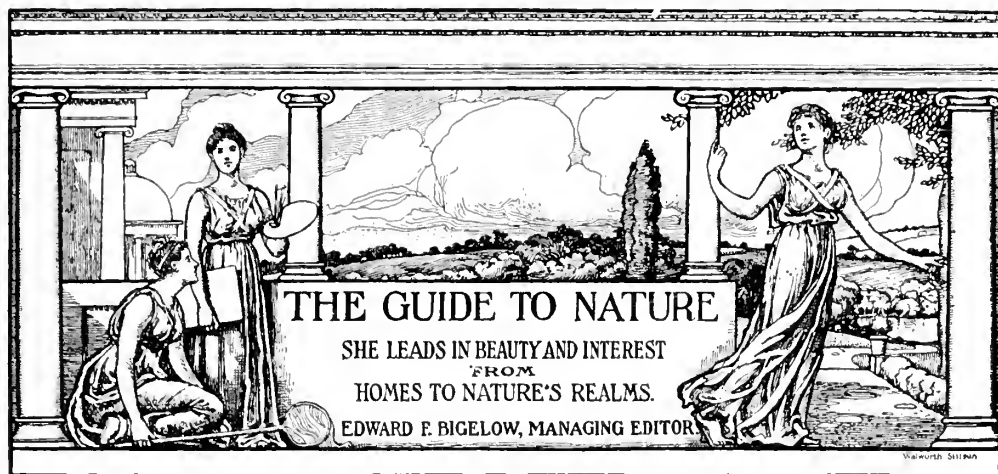
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Number 8

A Trifurcated Pine.

BY WILLIAM H. HUSE, MANCHESTER, N. H.

The white pine (*Pinus strobus*), one of the tallest and noblest trees in the East, has an excurrent trunk. That is, the trunk normally extends through to the top of the tree without dividing into large branches as do the maples, elms



THE THREE PARTED PINE BY THE LAKE.

and others. A whorl of branches grows around the trunk every year, while the trunk itself adds a longer or shorter extension with a terminal bud surrounded by other buds, the forerunners of next year's branches. Thus the approximate age of a white pine may be determined by counting the whorls of branches, adding five years for the growth near the ground where all evidence of limbs has been hidden by the growth of the trunk.

Thus it is when all is well. Accidents, however, occur with trees as with people. Occasionally the terminal bud is broken off or insects destroy it. The tree must then do something out of the ordinary or lose its distinctive character and appearance. Usually one of the branches in the uppermost whorl, like a big brother taking the place of the lost head of the family, grows gradually into a vertical position and so continues the trunk with a curve where the branch became the head.

Occasionally two or more branches make the same start in their vertical growth. Then one either gets ahead and the others eventually die, or both or all continue to grow and the tree develops two or three trunks from the point at which the terminal bud was destroyed. Until a few years ago there stood in the suburbs of Franklin in this State a tall, two parted white pine that was the first thing seen by travellers approaching the city, as it stood on the top of a high hill.

The three parted pine shown in the accompanying picture stands on the shore of Lake Massabesic in the outskirts of Manchester and is a distinct addition to the beauty of the lake shore as it stands in a row with five large pitch pines (*P. rigida*) that fortunately grow on city land at the water's edge and so will probably not be cut down for lumber in the near future. The three trunks of the white pine start about ten feet from the ground, and many years' growth have brought their sides close together with just room for small people to crowd in between when a photographer is at hand to take a picture.

Leaves are all a-flutter
 With the whispering breeze.
 What, think you, it tells them,
 Sleeping on the trees?
 —Emma Peirce.

DEATH OF WILLIAM H. HUSE.

A marked copy of the Manchester, New Hampshire, "Ledger" brings to us the surprisingly sad news of the sudden death of Mr. Huse on December 2. He had recently sent us the preceding article, "A Trifurcated Pine," and several others which we have in type. There have also been articles by him in previous numbers.

The newspaper tells us that he was the principal of a local school and prominent in church work. He was nearly sixty years of age.

Personally and on behalf of the members and friends of The Agassiz Association we extend sympathy to the members of his family.

On the Old Mohawk Trail.

BY CHARLES NEVERS HOLMES, NEWTON,
 MASSACHUSETTS.

Blazed by the war-lust of untutored minds
 Through pathless forests, over vales and
 hills,
 The Mohawk Trail 'mid sun and shadow
 winds
 Past deep ravines and rock-environed rills.
 From crowded streets and surging surf afar,
 It winds through pleasant Greenfield to
 the west,
 O'er Shelburne's hills and higher Florida,
 Across the tunnelled Hoosac's slopes and
 crest.

Like waves around that crest the mountains
 rise,
 Grand monuments rough hewed by
 change and time,
 Stupendous, steel, a gulf-like valley lies,
 And Greyrock looms supremely and
 sublime.

Where painted savage ravaged hill and vale
 The white man's car ascends the Mohawk
 Trail.

A Late Cuckoo.

Mr. William H. Huse of Manchester, New Hampshire, writes as follows:

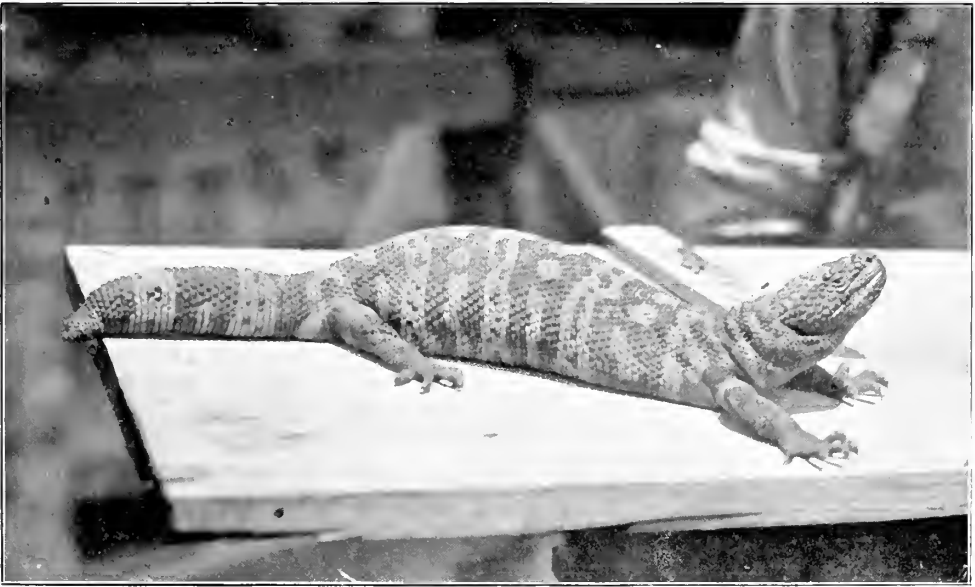
"It may interest you to know that on October 20 a yellow-billed cuckoo was brought to me by children who had found it unable to fly. It was little more than skin and bones, and died that night. I suspect that it found little to eat so late in the season in this latitude, and died of starvation. This is the latest date that I have for the yellow cuckoo in Manchester."

The Beaded Lizards.

BY ALLEN S. WILLIAMS, DIRECTOR REPTILE
STUDY SOCIETY OF AMERICA.

North America has the distinction, proud or otherwise, of having the only definitely poisonous lizard in the world. This is a southwestern genus of two species and is a habitant of arid regions, practically a type of desert life. These close cousins are termed beaded lizards, and an inexplicable thing about them is that they exist in widely sepa-

The northern form, "pink, or reddish yellow and black, head mottled with the lighter hue." Southern species, "pale yellow and black, head entirely black." The skin is covered with closely set beadlike tubercles, imparting a remarkable similarity to Sioux Indian beadwork. The form of these lizards presents a stout body with short limbs and a short, thick, rounded tail. An adult Gila monster attains a length of about twenty inches, while the



THE GILA MONSTER.

rated localities. The northern species inhabits Arizona and New Mexico, and is there best known under its formidable cognomen of "The Gila Monster." This name is derived from the long and crooked Gila River and the name obtains the Spanish pronunciation, with the G sounded as H, so "heclah" is the proper sound.

The generic scientific term for this family is *Helodermatidae*, and the Gila monster is termed *Heloderma suspectum*, while its southern cousin, living far down in southwestern Mexico and northern Central America, is termed *Heloderma horridum*. Dr. Raymond Lee Ditmars, Curator of the New York Zoological Park, in "The Reptile Book," thus succinctly specifies the difference in appearance between the two species so far as coloration is concerned:

beaded lizard grows larger, Ditmars's own measured record being twenty-six and one-half inches.

In our own "Southwest" the popular view of these animals is that they are to man "deadly poison." The natives take delight in exaggerating the effects of the bites of these animals, although they probably believe much of what they tell. The late Edward Drinker Cope, in many respects America's foremost herpetologist, christened the Gila monster *Heloderma suspectum* because at that time, maybe forty years ago, the creature was only resting under suspicion of possessing poisonous potentialities. Dr. S. Weir Mitchell was a pioneer investigator who early definitely established the fact that this weird looking lizard really is venomous. Since then this subject has been thoroughly investigated and a sum-

mary is complete in the book of Dr. Leo Loeb, who led a staff of eleven competent coadjutors in a thorough research under the auspices of the Carnegie Institution of Washington and the results were published in 1913 by the Institution, entitled "The Venom of Heloderm."

The truth about the toxic powers of beaded lizards reveals that their venom is powerful enough to kill fowls and small mammals but is inadequate to produce a fatal result to man. In his fascinating and valuable brochure, "Poisonous Animals of the Desert" (Bulletin No. 83), Dr. Charles T. Vorhies, Zoologist of the University of Arizona, Tucson, the author declares that investigations have failed to establish a single reliably authenticated instance of a human being having died from the effects of a beaded lizard's bite. Dr. Vorhies emphatically declares that there is no defensible reason for native or tourist to destroy these animals, urging that they should be spared as an interesting and picturesque figure of the characteristic fauna of our southwestern arid region.

The Gila monster and I are old friends. I have possessed specimens, off and on, for twenty-five years. If taken young these lizards can be tamed like all other of the world's wild creatures. While I have faith enough to handle specimens that I know are tamed with a certain degree of freedom, I do not permit them any possibility of biting me any more than I do a rattlesnake. A characteristic of the beaded lizards is that they have strong jaws and bite like a snapping turtle and hold on with the tenacity of a bulldog. As Ditmars points out, a docile and quiet "tamed" Heelah, who is sluggish in a cool, shady place, will rear up like a lion rampant and fight everything and everybody if placed on sand in the hot sun. While the beaded lizards have not needle sharp fangs, the teeth of the nether jaw are grooved on the forward side and the venom flows along the grooves from a fan-shaped row of containers in the tissues of the jaw.

The feeding habits of these lizards in their habitats have not been fully observed and reported. In captivity they are as easy to keep as any kind of reptile I have known, for they feed readily, like various other lizards,

on chopped meat and raw hens' eggs. The most delightful tidbit known in the menu of a captive "Heelah" is a choice mouse omelet—a dead mouse beaten up in raw egg.

Delight for Lovers of Shakespeare.

It is indeed an acceptable Shakespearean festival that E. H. Sothern and Julia Marlowe have for several weeks been presenting to delighted audiences at the Century Theatre, New York City. They began on October 31 with "Twelfth Night," following it by "Hamlet," "The Taming of the Shrew" and "The Merchant of Venice."

Every lover of Shakespeare and of education in general knows the decided educational advantages derivable from performances by actors so efficient as Sothern and Marlowe, who have returned to the New York stage after some seven years of absence. We can but voice the cordial good wishes of lovers of English and of education in offering words of appreciation to these efficient portrayers of Shakespeare's plays. Sothern and Marlowe have endeared themselves in the hearts of people of all ages. It is generally supposed that Shakespeare appeals chiefly to the adult but these accomplished actors have proved that even young children catch the spirit and feel the superiority of these high class dramas when they are properly presented.

The Glen.

BY MAUD A. NEWCOMB, NEW YORK CITY.

There's a quiet glen,
Full of shadowy places,
Where the air is cool,
And the sun embraces.
Where chipmunks play,
And sounds are sweet,
And flowers unbidden
Bloom close to my feet

Where the wind in the trees
And the streams flowing under
Both joyously sing
Of a world full of wonder.
Where a waterfall splashes
Its rainbow spray
Over rocks that are mossy
And tinted gray.

Where the lines of the mountains
Stretch softly green
Through the fairest country
That ever was seen.
There's rest for the body,
And peace is there,
And it's joy to be free
In the open air.

TO KNOW THE STARRY HEAVENS

The Heavens in January.

By Professor Samuel G. Barton of the University of Pennsylvania.

IN January we naturally look forward to see what is to occur in the starry heavens during the twelve months to come. During the year we have the smallest possible number of eclipses, namely, two. There must be two eclipses of the sun every year. There are no eclipses of the moon this

occur. In 1915 the eclipses were both annular eclipses which could be seen principally over water areas. This year the first eclipse is an annular one on March 27. It has no great scientific importance. A very small partial eclipse may be seen under very unfavorable conditions from a part of



Figure 1. The constellations at 9 P. M., January 1. (Hold the map so that the direction faced is at the bottom; that is, it facing east hold east at the bottom as south now is.)

year. This is not very unusual. It occurred in 1904, 1908 and 1915, and will occur again in 1926, 1929 and 1933. At these times, excepting 1908, only two eclipses of the sun occurred or will

Florida, but cannot be seen at all from other parts of the United States. The second eclipse is a total eclipse occurring on September 20. This can be seen principally from Australia and

the near-by islands. The path in which the eclipse can be seen as total, about one hundred miles wide, cuts directly across Australia and most of the observing stations will be located there. It lasts as a total eclipse for about five minutes. This is a long duration for an eclipse. Astronomers will utilize it as a means for further testing the Einstein theory and for other purposes. Expeditions will be sent from United States, England, Canada and Germany. Special lenses for the purpose are now being made at Pittsburgh. No part of the eclipse can be seen from here. We will see no eclipse in 1922.

* * * * *

The Planets.

Mercury is a morning star from February 14 to April 24 and from June 18 to August 7 and from October 15 until December 8. At other times it is an evening star. It will be seen best in the early evening about May 23. Venus is a morning star until February 9, an evening star until November 25, then a morning star for the remainder of the year. It will be in best position in August, September and October. Mars will be a morning star until June 10, then an evening star for the remainder of the year. It will be nearest to the earth on June 18, at a distance of 43,000,000 miles, and will then be brighter than Sirius, the brightest fixed star, and as bright as Jupiter, but not as bright as Venus. This will be quite a favorable year for seeing this planet but not as favorable as the year 1924. When nearest to the earth the planet is always far south and hence seen better from the southern hemisphere.

A story has been circulated that a large telescope is to be constructed at a place in the southern hemisphere where Mars will be directly overhead, for the purpose of observing it. This telescope is to be made by revolving a large mass of mercury at the bottom of a well. This is not a new idea. It has been known for a very long time that a mass of fluid revolved uniformly about a vertical axis will assume the form of a paraboloid of revolution which is the form in which the mirror of a reflecting telescope is ground. Clean mercury is a very fine reflecting surface. Hence, in theory, the idea of such a telescope is fine. In practice

it is different. The parabolic mirrors of astronomical telescopes must be made with an accuracy of a few millionths of an inch. No large body of mercury can be revolved with a steadiness which will give the surface anywhere nearly the accuracy of form necessary for astronomical observation. The experiment was tried many years ago by Professor Wood of Johns Hopkins University. He was the first, I think, to try it. As was expected by many, he failed to have success. There is no likelihood that such an experiment would be any more successful now. I do not expect to see it tried.

Jupiter will be a morning star until April 4, then an evening star until October 23, then a morning star until the end of the year. Saturn is a morning star until March 25, an evening star until October 4, and then a morning star until the end of the year. Uranus is an evening star until February 28, a morning star until September 4, then an evening star until the end of the year. Neptune is a morning star until February 4, an evening star until August 9, then a morning star until the end of the year. The planets will be quite interesting during the summer months.

* * * * *

The Calendar.

The Roman Emperor, Julius Caesar, found the calendar of his time so illogical and confused that he determined to make a new one. He sought the advice of an Egyptian astronomer, Sosigenes. They established the calendar which with a few modifications is in use today. One modification concerns us here. Sosigenes arranged the months alternating thirty-one days and thirty days except that February had but twenty-nine instead of thirty days in ordinary years. The seventh month of 31 days was named July in honor of Julius Caesar. His successor, Augustus, named the eighth month August in honor of himself and, in order that it should not have fewer days than the month of Julius, increased its length from thirty days to thirty-one days, taking a day from February for the purpose. Then, in order to avoid three consecutive months of thirty-one days, September was shortened to thirty days and the remaining months alternating from that point as they now do.

In this way the comparatively simple calendar of Sosigenes was upset and a complexity introduced into the calendar which has remained there these two thousand years, forcing millions to learn that "thirty days hath September." There has been much agita-

Year's day, a day with no other title. It is not January nor is it named as a day of the week. If the day before it is Sunday, December 31, the day following is Monday, January 1. This is followed by four quarters of three months each, the first and second

New Years Day	January	February	March
First Quarter	April	May	June
Second Quarter	July	August	September
Third Quarter	October	November	December
Fourth Quarter			
Leap Day			
Monday	1 8 15 22 29	6 13 20 27	4 11 18 25
Tuesday	2 9 16 23 30	7 14 21 28	5 12 19 26
Wednesday	3 10 17 24	1 8 15 22 29	6 13 20 27
Thursday	4 11 18 25	2 9 16 23 30	7 14 21 28
Friday	5 12 19 26	3 10 17 24	1 8 15 22 29
Saturday	6 13 20 27	4 11 18 25	2 9 16 23 30
Sunday	7 14 21 28	5 12 19 26	3 10 17 24 31

Figure 2. Calendar proposed by The American Committee on the Reform of the Calendar. The above figures apply to the months named above them.

tion for relief from this unscientific calendar.

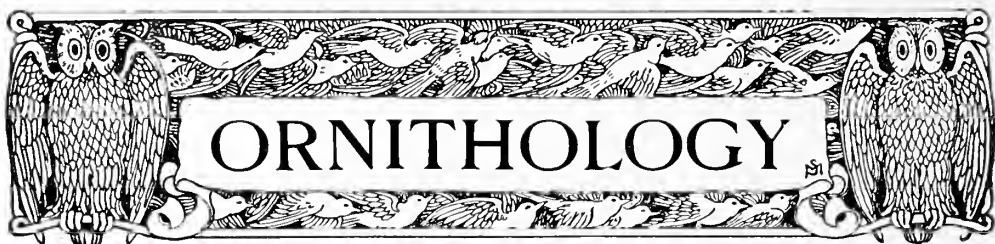
Those seeking a change naturally look to astronomers for leadership and advice. If the change is to be made it must be by agreement between nearly all of the nations. The matter stands thus: In July, 1919, the representatives of astronomy in the allied and associated nations met in Brussels to create the International Astronomical Union. Belgium, France, Great Britain, Italy and the United States were represented. Calendar reform was not the principal purpose of the Union, but it is the subject we are now discussing. Thirty-two committees were constituted for various duties, the last of which was the Committee on the Reform of the Calendar. Cardinal Mercier was made honorary chairman; Bigourdan, a Frenchman, chairman; Campbell and Crawford are the Americans on the committee.

In addition to the international union there is an American section of the union with its corresponding committees. Jacoby serves in addition to the two named above on the committee on the reform of the calendar. This American committee expects to suggest to the international committee the following reformed calendar: The years to begin with New

months to consist of thirty days and the third of thirty-one days. This accounts for the 365 days of an ordinary year. In leap year another day is added, preferably at the end of the year, and this day, like New Year's day, is not a day of a week or month. This may be called Leap day. The calendar in print would appear as shown.

The following advantages may be noted: The quarters are of equal length; the extra day, the thirty-first, always falls on Sunday, making the same number of week days in each month. The first, fifteenth and thirtieth, important business days, always fall on week days; holidays fixed by date, such as July 4th, always fall on the same day of the week. The calendar is the same for any year. It seems likely that if the new calendar is adopted a fixed date will be adopted for Easter. This has also been urged.

At the invitation of Italy the International Astronomical Union meets this year at Rome—in April, I think. It meets at intervals of three years. Suggestions will be received from other countries. Actual adoption of a new calendar could only be made by action by the legislative bodies of the various countries.



Where Snowbirds Sleep on Cold Winter Nights.

BY L. B. CUSHMAN, NORTH EAST, PA.

After a severe snowstorm in zero weather, when the wind has piled the snow in big drifts and swirled it into every crack and cranny, I often think of our winter birds, and wonder which, if any, are passing comfortless nights. A few species would be naturally housed in holes excavated by woodpeckers, but not all.

My thoughts have run especially to the snowbirds; not that they are more sensitive to the cold than others; perhaps because in winter they so greatly outnumber all the other birds here.

Where do they go when night comes? Being so thoroughly a ground bird, they would naturally be supposed to sleep on the ground. But in case all ground is hidden under the deep snow, would they then take to the hemlock trees or to the grapevine bowers? Would they huddle together on top of the snow, taking advantage of what protection some windbreak might afford?

My books give me no light. I have seen ruffed grouse dive into the snow for protection. Perhaps snowbirds do the same. Doubtless there are those who can speak from actual observation.

In furtherance of that idea, I wrote to Professor Lynds Jones for information. He is editor of "The Wilson Bulletin," the official organ of the Wilson Ornithological Club, of Chicago, and is also in charge of the Department of Animal Ecology in Oberlin College. Professor Jones has had a great deal of actual field experience, and is perhaps our best authority on the habits of birds frequenting this lake shore country. Here is what he says: "Mr. L. B. Cushman, North East, Pa.

"Dear Sir: I have your letter of the 11th, asking about the roosting habits of the snow bunting.

"It was my fortune to have to walk three miles to attend Iowa College (now Grinnell) while I was pursuing my education. This walk led a quarter of a mile through a woods, and the remainder of the way over hills and across the prairie where both horned larks and snow buntings were common. Since the first recitation came at 7 o'clock, sun time, it was necessary for me to start before daylight during the winter months.

"On these walks it was a common thing for me to rout from their snowy beds both the larks and the buntings. They were securely hidden beneath the light snow, and when I approached would dart out with a protesting cry, only to dive headfirst beneath the snow again a few rods away.

"Here in Ohio I have found the larks doing the same thing, and also hiding at night beneath the dry grasses of the fields. I think that this tucking of themselves away beneath the snow at night is a common practice of open-country birds. Certainly the prairie chickens practice it regularly. I have seen them do it.

"Yours sincerely,

"Lynds Jones."

From this, it is evident that the snowbirds dive into the snow when it is new and loose, each one by itself, do not bunch together, and there spend the night rather comfortably, for they are a hardy bird, inured to the cold. In case the snow is hard, it would seem natural for them to bunch on top of it in some protected nook—pile up like a lot of young pigs—and each contribute to the warmth of the rest. Imagine two or three hundred birds in one pile!

Birds have no external ears and no chain of bones in the middle ear. Yet, apparently, their hearing is acute and they seem to locate sounds accurately. More observations are needed on these points.

Bird Notes Around Stamford, Conn.

BY PAUL G. HOWES, STAMFORD, CONN.

It is gratifying that the birds are coming back; that civilization is not to exterminate them all, and that the widespread and general sympathy for real rigid bird protection is bringing great results that are truly great in every sense of the word. Witness this: A few years ago it would have been impossible to find black-crowned night herons meeting anywhere near Stamford where I live. My house stands less than three hundred yards from the water of Long Island Sound with a clear view of all its beauties. At low tide three years ago an occasional heron of the species in question flew in for the purpose of feeding, but they were scarce at best. Since that time they have increased very remarkably until they now are common birds, as of yore. Several stayed all winter last year, owing to the mild season, and the culmination came during the spring of 1921, when I found a breeding colony, a real old time rookery, and near by were fifteen nests of the green heron to boot! For the good of the birds that nesting place will remain an ornithological secret for the present, at any rate.

Late in the summer (end of July) I visited the place and found two fine American egrets in company with other herons. This is my second record of this bird and a mighty pleasing one.

In 1911 I recorded the breeding of the killdeer at Long Ridge, Connecticut, nine miles from my house. Last year (1920) a pair bred in the same field that I found the nest in. They raised their young successfully. This spring they were back there and undoubtedly bred, while a second pair nested on the sands a few hundred yards from my house.

At Long Ridge, a pair of black duck have returned to a certain swampy thicket on my brother's farm for two seasons. They spend the summer and undoubtedly breed, but so far I have been unable to locate the nest. Their actions and the fact that in the fall there is a small flock of the ducks, substantiates this supposition very strongly. I have no doubt but what I will find the nest next year, as the birds

return to the identical spot in the spring.

For the first time in many years a pair of red-headed woodpeckers raised their young near my house this year. On August first the two old ones and four noisy young were living in some dead oaks near by. This is good news indeed!

Here is the biggest surprise of all. In June I was calling on a friend in Stamford. Near the house at which I was calling stood another one with large columns supporting the spacious porch on which several people were sitting. These columns were hollow and so placed that from the top near the porch roof an entrance could be gained to the inside of any one of them. As I sat on the porch of my friend's house I heard a loud squawking noise coming from one of the columns of the other house, and as I turned to look in that direction, a female sparrow hawk arrived with a garter snake and was greeted by four half grown young that piled from the column to be fed on the ledge. The birds paid no attention whatever to the people on the porch nor the automobile that entered the driveway. As far as I could see the entire family of hawks were as tame as robins. I have never seen anything like it before.

These few observations give a fair index to the ultimate results of bird protection. The laws that we have today, mean that in twenty years conditions will be as they used to be. We devastated Easterners won't have to go to the far northwest to see gulls and shore birds and the other ones that make the heart leap when they lay their eggs.

As for the smaller birds, they are undoubtedly increasing also. Orchard orioles breed commonly in the sapling maples along the streets where new houses have been built. They seem to prefer these little trees that have been transplanted and have been set back in the process. Again I have noticed that the warblers are easier to find than they used to be and the martins are coming back occasionally.

I have been convinced that gulls breed near Stamford for some time past, because more of them stay each summer when the time for departure northward comes. Since the breeding

season I have been informed of a place not ten miles from my house where many nested this year. Next spring we shall see. I look forward to the coming of the greatest of all seasons with keener joy than ever.—The Oologist.

Good Work By Our Game Warden.

Mr. Wilbur F. Smith is ever on the watch for transgressors of the game and bird laws. One would suppose that his duties would lie almost wholly within the domain of game birds but,



SONG BIRDS TAKEN FROM TWO ITALIANS AT WILTON, CONNECTICUT.

strange to say, he has ever to keep watch against the slaughter of our beautiful song birds. The accompanying illustration shows twenty such that he took from two Italians at Wilton, Connecticut. The list includes eight robins, four catbirds, four flickers, two jays, one thrasher, one woodpecker.

In Behalf of the English Sparrow.

BY THEODORE H. COOPER, BATAVIA, N. Y.

Sparrows, swallows and crows are my favorite birds, but when I look over the current nature magazines I find little said about them. This seems strange as they are common birds and have become like old friends.

I find that most bird lovers are never weary of exalting the more brightly colored and rarer forms, but as I have seldom seen such they are not so interesting to me.

To the real naturalist it is painful to hear such expressions as, "There is only one bird we hate. There is only one bird we take pleasure in killing. Bird lovers will doubtless recognize the English sparrow as the despised species." Indeed! And why so? I fail to recognize any species as despicable. I put up several feeding places and boxes outside my laboratory window last year, and sparrows were the principal part of my bird visitors. I took particular pains to ascertain whether or not they would drive away other birds, but according to my observation they molested no bird that cared to come. If it had not been for the sparrows, my bird visitors would have been few, for the others are wild and timid, and therefore less familiar and friendly.

There are those who like to go abroad with a high power telescope to see some scarlet and yellow bird "to get notes on," as they say, but the common, everyday natural object is good enough for me.

The naturalist need not go south to see Canopus while he has not yet seen Alcor. One star will furnish ample material for his imagination, but the idle curiosity seeker will not be satisfied until he has pointed his telescope at the sun without the sun glass, and got his eyes burnt.

Those who are honestly interested in geology will not be so concerned about the great museums' collections of fossils as they are about the underlying structure of their own landscape, and the forces which have produced it. The fragment of a fossil protruding from a rock will be as interesting to them as a skull of Triceratops.

Those who scorn the English sparrow evidently have not heard that, "The dear God who loveth us, He made and loveth *all*."

Much of the bird plumage now sold in the stores and alleged to have been imported before the present law forbade such importation is probably smuggled. Many bird lovers are reported to be refusing to trade at places where such feathers are carried.

EDITORIAL

The First Woodcraft Dinner.

The first annual dinner of the Woodcraft League of America was held at the Pennsylvania Hotel, New York City, December 8. In the earliest plans it was estimated that there might be two hundred present and provision was made for that number. Imagine the delightful surprise when five hundred appeared and the great disappointment when four hundred were turned away. This attendance and the added applications, together with the evident enthusiasm at the dinner, must be gratifying to the managers of the Woodcraft League, especially to Mr. Ernest Thompson Seton and his secretary, Philip D. Fagans. Every detail was carefully observed. An enormous number of souvenirs from the wild woods in the form of birch bark, Christmas ferns, hemlock branches, ground pine (*lycopodium*), etc., was supplied through the personal labors of Mr. Seton for the table decorations.

The Woodcraft League is rapidly growing. We congratulate the organization. In the spirit of real nature study it seems to come close to the true all-round nature study for young and old. It approaches nearer the work and purpose of The Agassiz Association than any other society of which we have knowledge. The only difference is this: the work of The AA is along perhaps what we might call direct or at least more technical lines of nature study. We go back to the primitive home of the earliest settlers for our emblems, while the Woodcraft goes to the Indians past and present and deals more especially with the delightful myths and emblematic significance of nature lore.



When Mr. Ernest Thompson Seton and the Boy Scouts parted company all the world wondered. A variety of opinions were expressed as to the reason for his leaving the position of Chief Scout of the Boy Scouts of America, but whatever may have been the cause the result has been bad for the Boy

Scouts of America and good for the establishment of the new organization. Mr. Seton was the idol and the ideal, the hero for the Boy Scouts, the personification of all that is great and good in the woods and fields. Probably he was too much so and one can but surmise that jealousies arose. Nothing succeeds less than too much success under some circumstances. But what was a loss to the Boy Scouts is evidently a gain to Mr. Seton. In the Woodcraft League he can give full scope to his appreciation of Indian lore and his ideal of nature study. He can teach young and old to rub wood against wood to make a fire, and have all dance around the flames as much as he pleases. He is at liberty to inspire all classes with a love for nature. Some of us can but be surprised that the Indian features have proved so valuable an aid, but that they have thus proved is evident to even the most casual observer.

Perhaps it is best after all that Seton's nature study should be developed through the League rather than through the Boy Scouts. The Boy Scouts have so many other things to take their attention that they have not much time nor leisure left for the real out-of-doors, other than athletic and "gang" spirit. It is evident also that the Boy Scouts give but little encouragement to any one who would try faithfully to develop nature study affairs. According to the conception of the management, the scope of the work does not include this item. Perhaps they are right, perhaps not. At any rate every one must admit that the Boy Scouts have been successful in developing their chosen pursuits.

The Agassiz Association, the oldest organization for outdoor observation for all people, young and old, extends cordial greetings and good wishes to this youngest organization, the Woodcraft League. There is work enough for all and it is a joy to see that work being so well done.

CORRESPONDENCE AND INFORMATION



The Psychology of Killing.

(See page 70, October, 1921, number.)
Newton, Massachusetts.

To the Editor:

It seems to me that any one who kills for the pleasure—as the so-called sportsman kills—can have in his whole being not one spark of love for animal life. The man who truly loves animals and nature studies them as John Burroughs studied them. He, to my mind, was a true sportsman. He lived with them, made friends of them.

The man who goes every fall to hunt with his gun, and returns glorying over his trophies, is a bad example for our young children. The destructive tendency is so strong in most of us that it seems to me every nature magazine should try to develop the constructive tendency in our young people, to help them live and let live. To do away with all unnecessary killing should be the aim of every nature publication.

Very sincerely yours,

(MRS.) MARGUERITE A. R. HOLMES.
(COMMENT BY THE REVEREND WILLIAM
J. LONG.)
Stamford, Connecticut.

To the Editor:

You ask me kindly for an expression of opinion concerning a certain letter which condemns hunting and hunters. Frankly, I think that the letter is of a kind which admits no other opinion. There are people who believe that all hunting is wrong, and there are people who believe that moderate hunting is right. Hunters understand the first point of view and respect it; but those who condemn hunting are sweeping in their denunciation. That is a significant difference.

You will therefore excuse me, please, if I make no argument in defense of those who hunt; but perhaps you may be glad to have a plain statement of fact from one whom five hundred sportsmen asked to be president of their Fish and Game League because

they knew him to be a naturalist who stands for the preservation of wild life:

1. The writer of your letter says, "It seems to me that any one who kills for the pleasure—as the so-called sportsman kills—can have in his whole being not one spark of love for animal life." Here is utter misunderstanding. Sportsmen do not kill for the pleasure of killing; they hunt for the pleasure of hunting, which is a very different matter. In some of their happiest days afield there is no killing whatever.

2. One man kills a lamb or a chicken which trusts him and feeds from his hand; another kills a deer or a woodcock which rushes away at the mere sound of his footsteps. One killing is a crude matter of business, and the creature has absolutely no chance for its life; the other killing calls for patience, skill, knowledge of the woods, and the game has nine chances in ten of escape. The deer and woodcock no less than the lamb and chicken are used for food.

Personally, if I had to make choice between these killings, I would shoot the woodcock, or try to, rather than take the axe to the chicken. The only refuge is to turn vegetarian, which lands us in a contradiction. The lamb and deer, which eat grass, and the chicken and woodcock, which eat insects, are taking life as surely as the man who eats meat. Moreover, the insect and the grass feed upon other forms of living things. The very dirt under our feet swarms with life that is constantly being destroyed and renewed, and in the glass of water which quenches our thirst is enough animal life to populate a universe.

3. Some of the most devoted lovers of wild life I know are sportsmen. They guard every innocent thing that lives, game included, and are always ready to give time and money to bird and animal protection. To them largely we owe the absolute prohibition of killing

song birds; to them wholly we owe the laws that protect game for ten or eleven months every year, the bag-limit that stops indiscriminate killing in the short open season, the establishment of hatcheries and game farms for restocking our streams and covers, the setting aside of bird and game refuges where no hunting is allowed, and a score more reforms which all aim at the one same thing; namely, that our children shall find abundant wild life in our woods and fields. They do not talk of themselves as nature lovers; but "by their works ye shall know them."

4. The letter mentions John Burroughs as an alleged type of the true nature lover; but the writer evidently has not read his works, especially the newspaper and magazine articles which do not appear in his published books. The fact is that he often hunted, and that aside from hunting he did a lot of killing (shooting birds to identify them, for example) which most sportsmen object to as needless cruelty.

Very sincerely yours,

WILLIAM J. LONG.

(COMMENT BY THE EDITOR.)

I have frequently visited John Burroughs at Riverby and Slabsides. At least once a year for ten years I took with me a company of boarding school girls. Mr. Burroughs frequently entertained and instructed us by telling us graphically and in detail of the necessity of killing the woodchucks on his premises. At one visit Mr. Burroughs stood on a high rock and pointed out to the girls the beauties of the Hudson River that he said could be seen for forty miles. Just below where he was standing a girl and I saw in the crack in the rocks a black snake. When the others knew of this discovery they unanimously requested that it be pulled out by the tail, and that was done. Holding that living snake, which I think was about five feet long, the girls debated as to whether it should be freed or killed. Mr. Burroughs acted as a judge and apparently enjoyed the discussion. His verdict was, "Not that I love the snake less but that I love the birds more. Kill it." We did so by crushing the head with Mr. Burroughs's help. I have photographs and lantern slides of the event and have often told the story for the past ten

years or more. Mr. Burroughs always took the stand, kill when the killing is for the welfare of human beings or of other forms of life.

New Jersey Reptile Students Dine.

The Hotel Robert Treat, Newark, was the scene on Tuesday, November 15, of a remarkable assemblage of enthusiastic students of a not generally popular form of nature—reptiles. Seventy New Jersey members and their guests of the Reptile Study Society of America, headquarters 782 East 175th Street, New York City, of which Allen S. Williams is the founder and director, dined together and afterward listened to speakers whose talks were both valuable and witty. As a finale a remarkable array of serpents and lizards appeared upon the scene from the private collection of members of this unique society and also from the Reptile House of the New York Zoological Park. These reptiles were all handled with the greatest interest by the diners, including a big boa constrictor, with the exception of large specimens of rattlesnakes, water moccasins and copperheads, which came as guests of the society's chief huntsman, Mr. Arthur L. Gillam, of Flushing, Long Island. These representatives of North America's thanatophida were released on tables and floor and recaptured by Mr. Gillam to show just how the thing is done expertly and with assurance of "safety first" to captor and captive.

Mr. Burnham W. King of East Orange, author and amateur ornithologist, was toastmaster, and Mr. Gayne T. K. Norton, chairman of the society's publicity committee, of Manhattan, was chairman of the dinner committee and won praise and credit for the success of the dinner. The guest of honor was Raymond Lee Ditmars, curator of mammals and reptiles of the New York Zoological Park and author of "The Reptile Book" and "Reptiles of the World." Mr. Ditmars—a native of Newark—described in detail the new thirteen-foot king cobra recently acquired by the Bronx Zoo and classed him as the most dangerous animal on earth today. Mr. Ditmars then related a hair-raising experience with two murderous Seminole Indians while he was sleeping alone, on a collecting trip, in a hut on an island in a southern

swamp, but saved his auditors from death by heart failure by the timely climax that he "woke up" and that it was but a bad dream.

T. Gilbert Pearson, president of the National Association of Audubon Societies, though a "bird man," is an enthusiastic and well beloved member of the Reptile Study Society and, as always when speaking at the society's dinners, charmed and fascinated his listeners with his stories, wit and humor and obvious bonhomie. Mr. Pearson is rated one hundred per cent for veracity as a snake hunter for he told in detail how for years he has been hunting rattlesnakes in Florida, the Carolinas, Texas and even New Jersey and has never yet succeeded in catching a glimpse of one, which is somewhat different from Mr. Gillam's record of bagging an average of three a day for one hundred days in Florida.

Mr. Williams sketched the society's origin, development and program and won a lot of space in next day's Newark daily newspapers by predicting that within ten years Newark would cover the Hackensack meadows and might even absorb Jersey City and Hoboken, and that Newark's opportunity for a great contribution to natural science would be the erection of a municipal reptile house with an auxiliary snake park, after the lines of Dr. Vital, Brazil's world famous institution at Butantan, Sao Paulo, Brazil, with the assurance that as a publicity generator it would get Newark in the newspapers and magazines of the whole civilized world.

An evidence of a member's enthusiastic interest was the arrival of America's noted surgeon, Dr. Howard A. Kelly of Baltimore, usually y-clept in the newspapers "The Radium King," who came on a flying trip just to eat and hobnob with his fellow reptile students.

The Reptile Study Society was organized May 1, 1916, has six hundred members, with one or more in every state of the U. S. A., and is rapidly growing. Its next annual dinner will be late in February, 1922, at some Manhattan hotel, and its next yearly spring snake hunt, Sunday, May 7, 1922, starting from Great Notch, New Jersey.—A. S. W.

Helping the Boys Get Started.

BY THEODORE H. COOPER, BATAVIA, N. Y.

There are days when a person wants something to do, when things become dull around home and he longs to get out and have new adventures and experiences.

Few boys care for the wishy-washy kind of "nature study," but if the reader resembles me he will like to go out to the woods in his neighborhood and climb the biggest tree he can find, and imagine himself a monkey or an Indian, or go through the woods like a pirate looking for loot to take home.

Is your eye as sharp as an eagle's? Can you detect a crow's nest among the branches, or a branch itself which is worth noting because it is so sinfully crooked or unusual in some other way? Would you make a good detective; can you ferret out insects hidden under loose bark, or see the squirrels, birds, etc., before they see you? Supposing you had to live in the woods where there are wild animals, are you cunning enough and strong enough to climb a tree quickly? Do you know the best roosting places in the trees of your locality? Is there a cave where you could get in out of the rain as the cave men used to do?

The other day, when I was in the woods, I saw an owl and a large turtle, although such things are not plentiful around here because the woods have been cut off considerably.

Almost everybody has a collection of something or other. Some collect stamps and old coins; others, Indian relics, old guns, etc.; still others have curious stones, birds' eggs, sea shells, or they trade samples of these for strange and interesting things from other parts of the world. I have collections of all these things, and have obtained some by exchanging.

What I want to do is to help boys get started in collecting the things that interest them most. It doesn't matter where you live, or in what circumstances you are at present, write to me, telling me what you are especially interested in and what you have to trade, if anything, and I will help you to get what you want, if I can. Perhaps you are interested in astronomy, microscopy, chemistry, or some other department of science. If you are at all interested, please correspond.



Contributions.

Mr. R. L. Agassiz, Hamilton, Mass. -----	\$20.00
A Nature Lover -----	1.00
Mr. Elisha P. Cronkhite, New York City -----	25.00
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Sound Beach.

Dr. Edward F. Bigelow lectured Monday evening, December 5, at the dinner of the Sunrise Club at the Cafe Boulevard, New York City. The subject was "Girls, the Loveliest of All God's Creations."

Miscellaneous Contributions.

Mr. George B. Windsor, Stamford: Four photographic negatives of botanical interest.

Mr. Leon Barritt, Brooklyn, N. Y.: Barritt-Serviss Star and Planet Finder.
Miss Margaret Brooks, Sound Beach: Shells from the Panama Canal and a bird's nest.

Mrs. J. Allen Butler, Portland, Conn.: Copy of "The Youth's Companion" of Thursday, December 2, 1847, Vol. XXI, No. 31.

Mrs. Newton, Sound Beach: Horse-shoe crab, barnacles and miscellaneous pebbles and shells.

Mr. George Maurer, New York City: Framed "ARCADIA" in marqueterie, in duplicate.

We have long read of your work in your periodical and have had a faint impression that you were engaged in a praiseworthy enterprise, but we were not prepared to find the Bruce Museum and ARCADIA of such high character and such models of what educational institutions should be.—Chas. G. Root, Waterbury, Connecticut.

But here is something about volcanoes that will surprise most people. They throw mud, they throw stones, but they don't smoke. What we call smoke is the steam that makes—or at least helps make—the explosion. It often has the color of brown smoke because of the rock which has been blown into dust. Neither do volcanoes make "ashes." What is called "ash" is this rock powder, made when the rocks are blown into pieces by the sudden expansion of the water in them into steam.—Hallam Hawksworth in "The Strange Adventures of a Pebble."

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The United States Post Office Department at Washington carefully investigated The Agassiz Association and because of its altruistic, educational and noncommercial purposes awarded a special low rate of postage to its official magazine.

The Treasury Department Internal Revenue also carefully investigated and exempts from income tax The Agassiz Association and all gifts to it.

We have gladly and freely helped many other organizations in their nature interests. We untiringly render free services at ARCADIA to rich and poor, young and old. To us come a wide range of visitors. Our correspondents include every phase of humanity.

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We need and merit a gift of \$5,000. Do it now. Do not wait until you are dead. We want to give the donor the joy and satisfaction of knowing just how advantageously the money will be expended.

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Faithfully yours,

EDWARD F. BIGELOW,

President The Agassiz Association, Inc.

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Internal Revenue Service

Hartford, Conn., April 13, 1921.

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Agassiz Association, Inc., Sound Beach, Conn.

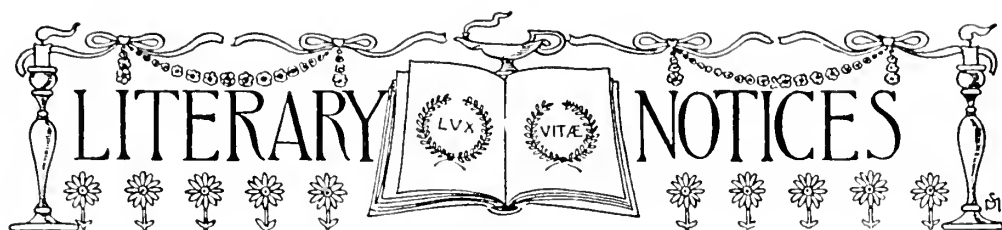
SIRS:

With further reference to your letter of February 28th, 1921, you are advised that the Commissioner of Internal Revenue at Washington, D. C., has considered all facts as presented relative to the activities of your association and has decided that you are exempt from the filing of income tax returns under the provisions of the Revenue Act of 1918.

The Commissioner has further stated that amounts contributed to your association by individuals may be deducted in the income tax returns of said individuals to the extent provided in Section 214 (a) (11) of the Revenue Act of 1918.

Very truly yours,

JAMES J. WALSH, Collector.



LITERARY NOTICES

NEW CREATIONS IN PLANT LIFE. An Authoritative Account of the Life and Work of Luther Burbank. By W. S. Harwood. New York City: The Macmillan Company.

This is a revision of a book well-known to our readers as we have given each of the several editions a special notice. All those interested in the work which Luther Burbank is doing with flowers and plants should read the book. We believe that all our constituency is thus interested and that many will be glad to have this great plant breeder himself tell what he has done, how he has done it, and especially the difficulties he has encountered and how he has struggled to overcome them. His success has been great and is well merited.

THE LIFE OF JEAN HENRI FABRE. By the Abbe Augustin Fabre. Translated by Bernard Miall. New York City: Dobb, Mead and Company.

If all writers on scientific subjects were as interesting as M. Fabre, many would agree with him that scientific investigation is one of the great joys of life—many who now shudder at the prospect of reading a book on biology, anthropology or any other "ology". For Fabre was a great magician. He was the good fairy of the scientific world, describing his discoveries and observations of his friends, the insects, with a keen sense of humor, a quick appreciation of the dramatic and a grace and charm of expression that have never been equaled in the history of science.

In October, 1915, Henri Fabre passed away quietly at the advanced age of ninety-two, at his modest home in the south of France. For the last twenty years he had been able to devote his entire time to the dearest wish of his life—the uninterrupted study of his little insects.

LIFE AND LETTERS OF HENRY LEE HIGGINSON. By Bliss Perry. A vitally human record of an American soldier, citizen, man of affairs, patron of education and music, master of friendship. Boston, Massachusetts: The Atlantic Monthly Press.

The primary interest of this biography to members of The Agassiz Association and other readers of this magazine is the fact that Mrs. Higginson, still living, is the daughter of Louis Agassiz. Mr. Higginson was also closely associated with Professor Alexander Agassiz and with other members of the family.

The book merits attention by reason of

Mr. Higginson's prominence in military, banking and especially in musical affairs. For a long time he supported the Boston Symphony Orchestra.

The biographer, well-known as a skillful writer, has done his work well. From the great mass of data, letters, etc., that must have been placed at his disposal, he has selected and put into acceptable shape that material which the reader will be glad to have. The book should be interesting not only to Bostonians and to Members of The Agassiz Association, but should have significance to the general public as Major Higginson's life was such as should be inspiring to any one anywhere. He had dealings with so many public interests that his life is a parallel comment upon world matters, notably the Civil War and the great World War. He died November 14, 1919. Had he lived four years longer he would have been eighty-five years of age.

The editor of this magazine had the pleasure of personal acquaintance with Major Higginson and greatly enjoyed a friendly chat with him at his office in Boston. He gave one the impression in personal conversation of great ability and of great kindness of heart, and of thorough familiarity with educational and musical matters, although he was what would generally be called a man of affairs. His friendship was highly prized by those that had intimate acquaintance with him. Mr. Perry has done his work well as might naturally be expected. He is a skillful writer and author of note. He has given us a pleasing and inspiring book.

The Ravine.

High on the wooded hillside,
In the heart of the forest wide,
A little ravine lay hidden,
Running the path beside.

Emerald mosses lined it,
E'en to its outer rim,
And ferns in fairy circles,
Were filling it to the brim.

'Twas one of Nature's jewels,
Embedded in casket green,
That, but for rare good fortune,
Would never have been seen.

The maker of all this beauty,
Up there under the blue,
A tiny rill of water,
Now leaping, now trickling through.
—Emma Peirce.



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Dr. Edward F. Bigelow,

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My dear Dr. Bigelow:

In your visits of the last three years to Briarcliff I feel that you have done much through your excursions with the girls, your walks and your lectures with the lantern slides to develop in them a love of nature and the wonders of outdoor life, but your lecture last week with the microscope projections quite transcended anything which you have done for us heretofore. In fact it seems to me one of the most important scientific achievements that has come under my notice.

If you can reveal the secrets of the microscope to large audiences of young people as you did for us you will certainly be making a great contribution to scientific teaching. I wish you all success in developing your work along this line!

Yours very sincerely,

(Signed) EDITH COOPER HARTMAN.

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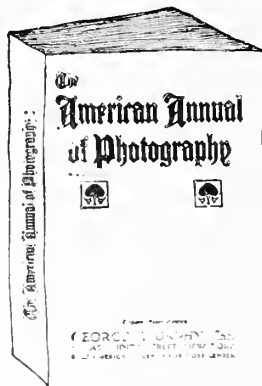
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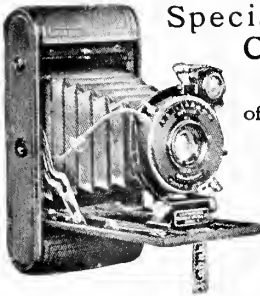
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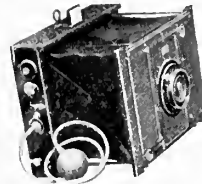
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EDWARD F. BIGELOW

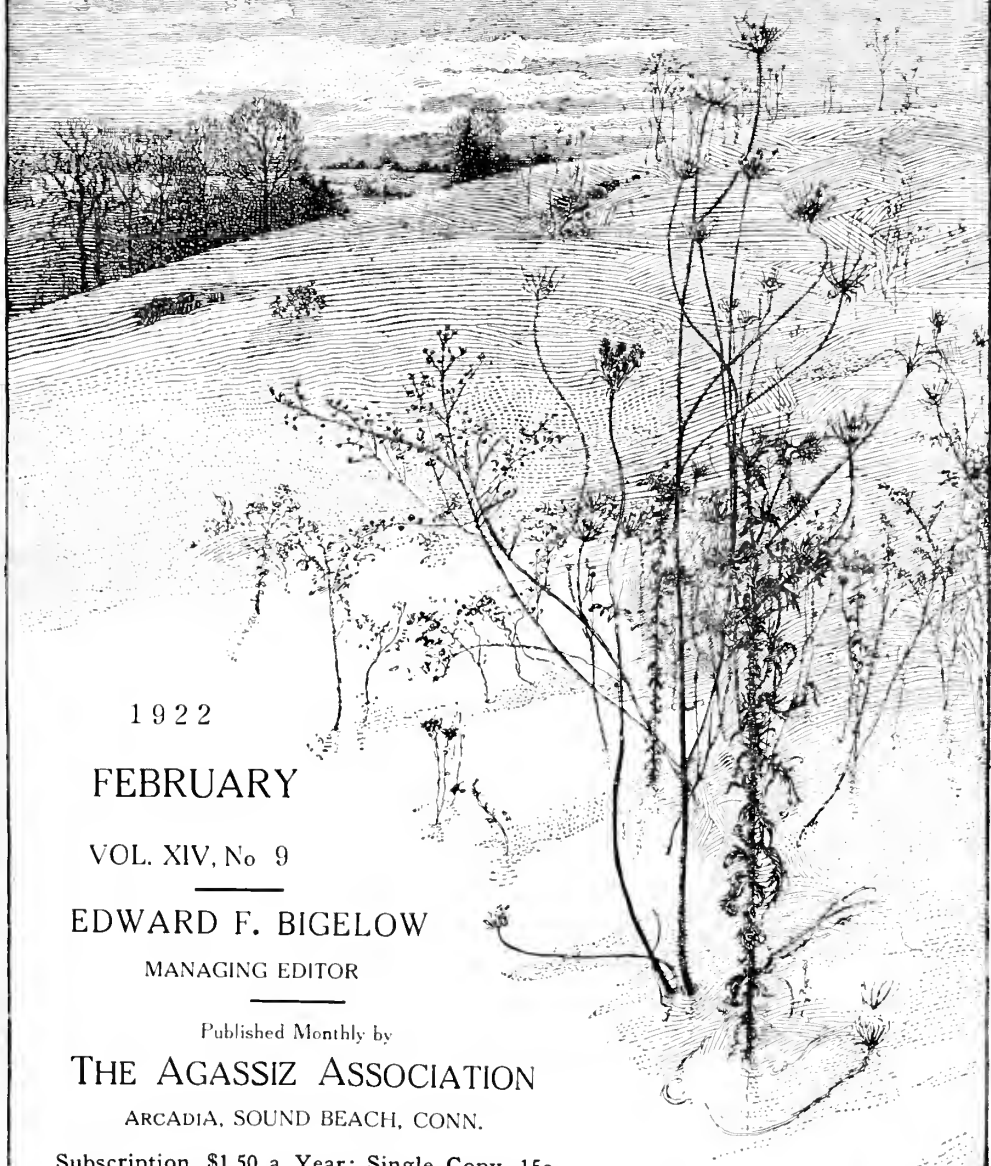
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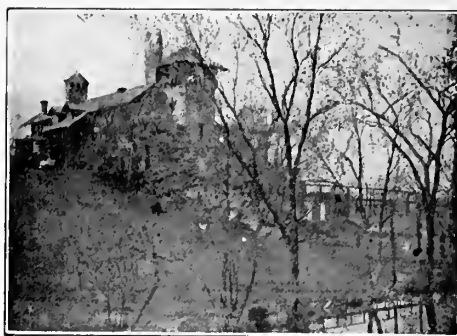
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His life, which was despaired of at the time, was spared, and now he has commenced the task of fulfilling his pledge. While on the sick-bed and near the bourne from which no traveler returns, he realized that life was the one thing which could not be purchased by gold and in the hour of unrest turned to his Creator. Here is a truism from his lips that few people in this world realize: "Money buys little unless the giver goes with the gift."

There are so many people that give with their hands and not with their hearts that the gift generally accomplishes but little in helping their fellowmen. Some donate large sums to charitable institutions because they believe it is an obligation they owe; others because it brings a certain amount of publicity and laudable comment from which they derive a satisfaction and glory they could not obtain otherwise. They like to be known as benefactors or philanthropists. Such gifts are gifts made from purely a selfish motive and are like the house that was built upon sand.

But Colonel Humphries is a man who has been upon the threshold of the eternal shadows, and his experience has mellowed him and given him a greater and broader outlook. He realizes what a frail thing life is, and has a greater sympathy with his fellowmen.

When a man has gone through such an experience, his gifts must come from the heart.—"The Stamford Advocate."

Our local daily paper thus effectively points out the especial value of gifts that come from the heart. Our late beloved friend, Commodore E. C. Benedict, well-known as one of Greenwich's generous philanthropists, was fond of expressing the same idea in his favorite quotation from Joaquin Miller's "Peter Cooper:"

"For all you can hold in your cold dead hand
Is what you have given away."

It is strange that more people do not realize, as this editorial writer says, what a frail thing life is. Every issue of every paper contains obituary notices and every issue also contains notices of the fool things done by human beings. Why isn't the lesson learned that life is short, that it should be well lived in getting acquainted with this beautiful and interesting world and in helping our fellow human beings? Love is indeed the greatest thing in the world and it should radiate to all nature and all humanity.

I am with you heart and soul in the good work you are doing, and so I am renewing my allegiance for another year.—W. H. H. Barker, M. D., Harvey, Iowa.

Dr. Edward F. Bigelow of Sound Beach has been elected First Vice-President of The New York Flute Club, of which George Barrere is President. This club includes nearly all the flute players of New York City and surrounding towns. There are several members in Stamford and vicinity.

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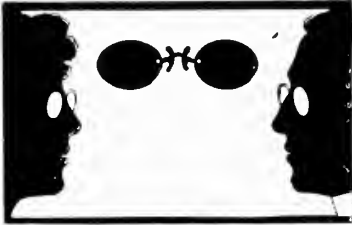
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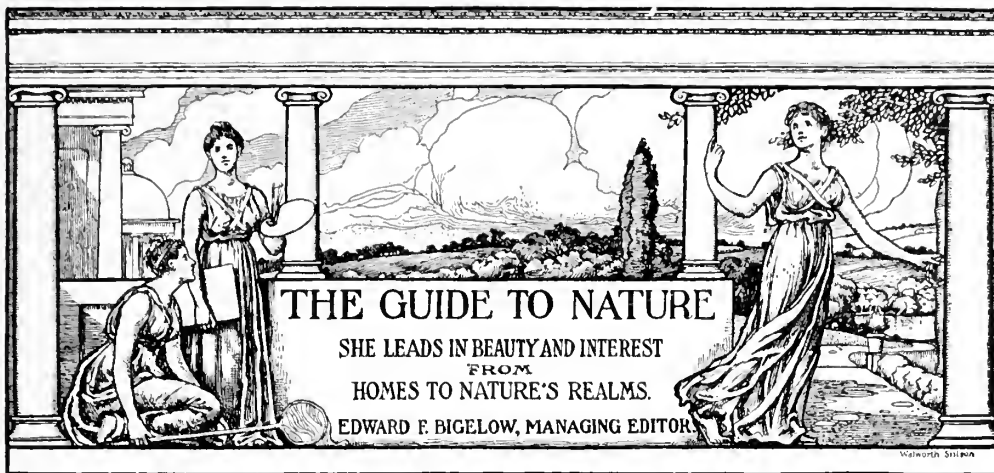
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Volume XIV

FEBRUARY, 1922

Number 9

The Beauty and Interests of Snow Crystals.

BY W. A. BENTLEY, JERICHO, VERMONT.

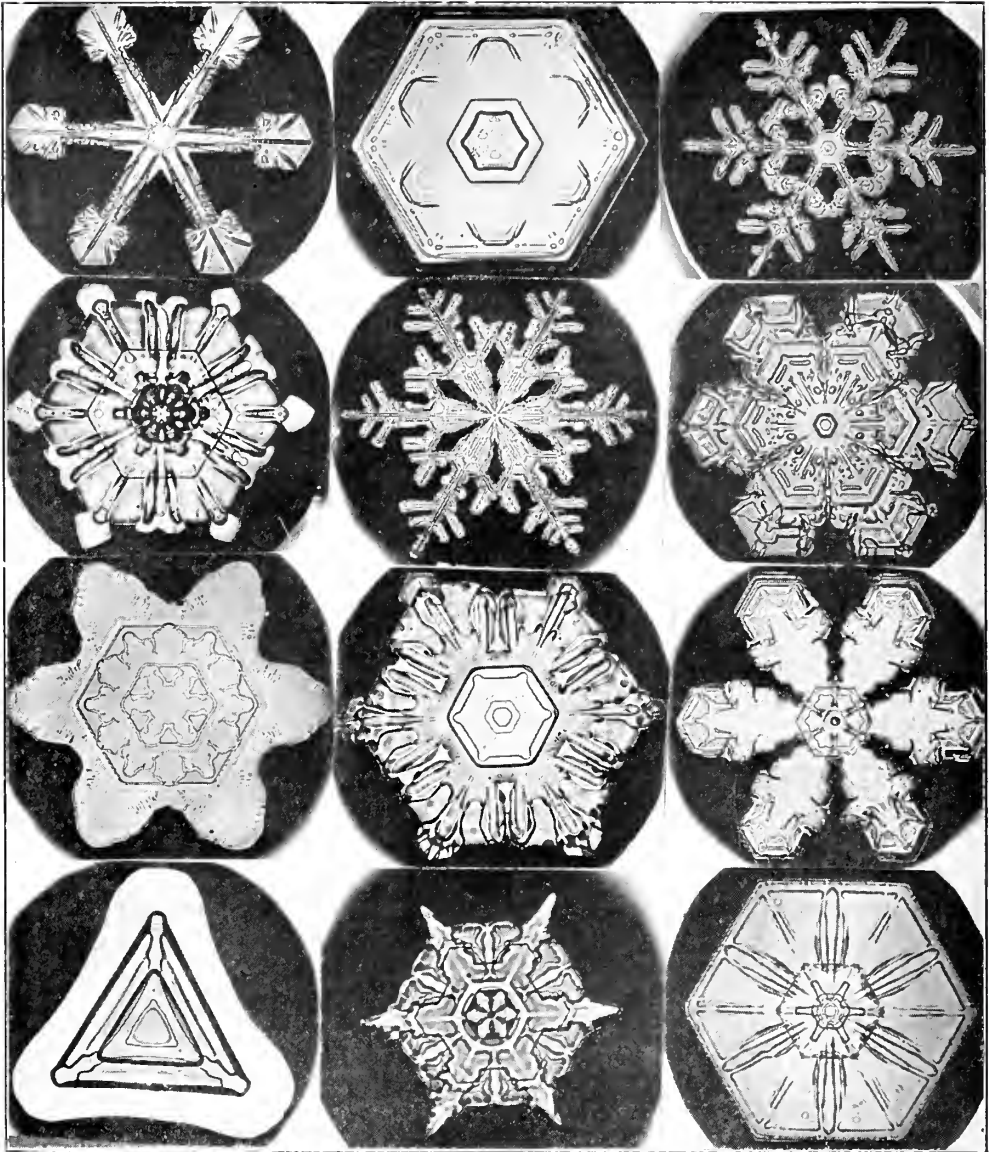
My photographic studies of snow crystals and water forms have been pursued over a period of thirty-five years. The many illustrated articles about them by myself and others have spread their fame until their marvelous beauty has become almost common knowledge. Recently the Bray Studios, New York, have made a lovely moving picture of them—Goldwyn Bray Pictograph No. 7001, entitled "Mysteries of Snow," released over the Goldwyn circuit—and this will enable millions of people to enjoy them. All those who wish to see this picture should request the managers of movie houses to get it.

Each winter during all these thirty-five years the compelling lure of the beautiful "snow stars" from cloudland has been irresistible. I am always "watching out" for favorable snowfalls, and when such come business, pleasure, grief, cold, hunger, all else are neglected or forgotten in the search for these marvelous gems from on high. From one hundred to three hundred and thirty-five have been photographed each winter except during the unfavorable one of 1913-1914, making a total of thirty-eight hundred and fifty to date

with no two alike. The last three winters have been unusually favorable.

My success in this work is due no doubt in part to long experience but also in no small degree to favorable location (Northern Vermont) near the general winter storm paths. It is quite possible that the snows here are unusually rich in perfect and beautiful snowflakes. Of course only a part of all snowfalls furnishes perfect forms. Snowfalls from the western segments of general storms, or those occurring between two closely lying "lows" (low barometer), contain the most of the beautiful crystals.

Snow crystal photomicrography is wholly unlike any other photographic work. A microscope and camera coupled together form the main apparatus. The lenses used are microscope objectives—three inch, three-quarters inch and one-half inch—giving from eight to sixty diameters magnification (sixty-four to thirty-six hundred times). So rapidly do snowflakes evaporate when separated, even during intense cold, that it is always a race between the photographer and evaporation, and hence the utmost haste is im-



BEAUTIFUL AND INTERESTING FORMS OF SNOWFLAKES.

perative. The reader can imagine, once an extra beautiful crystal is found, the intense anxiety of the photographer to photograph it before evaporation gets in its work. When a snow crystal evaporates it is gone forever. Another just like it will never be found for no two of the tabular forms are ever exactly alike. This infinite diversity gives intense fascination to the work, for each one looked at is almost sure to picture new features or a new combination of old features, and one is always justified in the expectation of finding specimens incomparably more beautiful

than any hitherto found. There are usually one or two times during a given winter when the flakes are unusually choice. At such times one is torn with mixed emotions of delight and despair. He is thrilled and amazed at the marvelous beauty of the flakes and in despair that so few of the countless snow gems, masterpieces of Nature's art, can be preserved by a photograph. The desire comes Oh for a thousand hands, a thousand cameras, to preserve more of this exquisite beauty so lavishly scattered over the earth. And yet there should be no despair, for this miracle,

like unto the miracle of spring's awakening, will come and come again for all time, either here or somewhere in the universe, for beauty and life and love are eternal, the things that make the universe worth while and justify its existence. When perfect snowflakes are falling, and one glances over the fields and realizes the countless millions that are falling on even one square acre, he thinks of infinity. How small after all the triumph of photographing a mere handful of the snow gems, for my thirty-eight hundred and fifty snowflakes would hardly make a good snowball such as the children throw at one another. What impresses us is not our part in photographing a few of them, but the marvel, the miracle, wrought in the making of them. Atoms and molecules, countless trillions of them in a drop of water, particles of matter so small as to be utterly beyond the power of microscopes to reveal, are the makers. Physicists picture atoms as tiny solar systems, a larger positive electron forming the nucleus (or sun) and smaller negative electrons (planets) revolving about it. And these wonderful snow crystals, nay, all things in Nature, are constructed of such as these! Endowed with attractive and repellant properties, these wonderful atoms exert such an influence, push and pull, upon one another, in response to some mysterious overlordship group control exerted by what we call the life principle, or crystallic laws, that they force one another to assume certain alignments, thus forming crystals or organic forms as the case may be. It is indeed an impressive lesson that Nature works her marvels through and by the unseen. Atoms, gravity, electricity, heat waves, intelligence, thought, etc., who sees them? And yet they are the most important things in Nature.

These thoughts have led us far afield and yet the structure, the life history, of the snowflakes is linked up with worlds and suns and everything in Nature.

A pair of birds, wagtails, have been observed to work continuously at feeding their young for sixteen hours a day; and during this time to make one hundred and ninety-two trips to their nest with food.

Records in Snow.

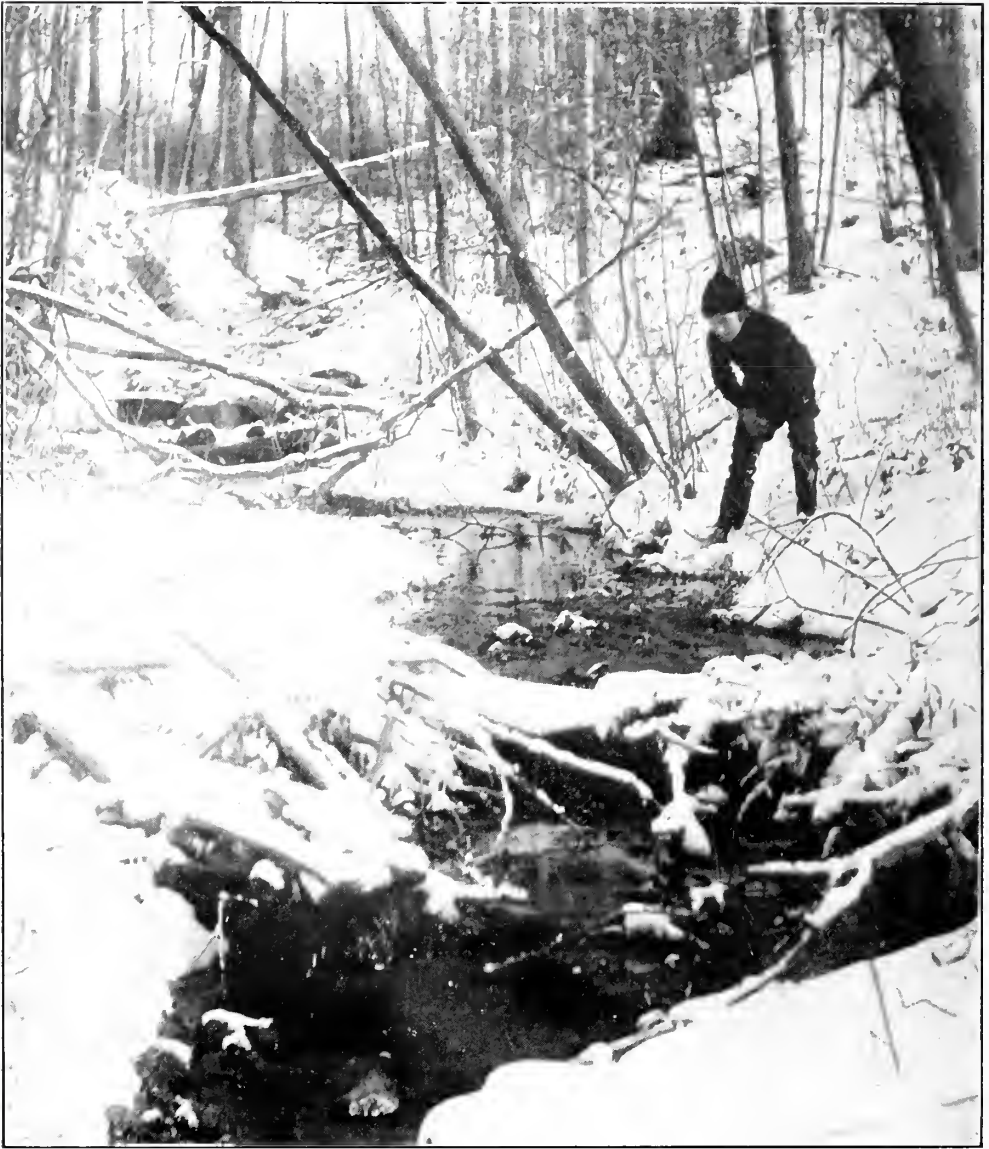
BY HERBERT W. FAULKNER, WASHINGTON, CONNECTICUT.

A ramble through the woods after a light snow reveals to us many of the doings of our little wild neighbors whose records may be read as we saunter. As soon as the snowfall has ceased the little creatures who are not fast in winter's sleep sally forth in search of food and drink. A pool, seemingly as black as ink, is the focus from which radiate hundreds of little footprints of squirrels, rabbits, muskrats, field mice, partridges and numerous small birds.

By these tracks we see that the rabbit uses his fore paws somewhat like crutches to support his weight while he swings his hind paws ahead of them. The field mouse drags his tail from side to side, tracing a sinuous curve. The partridge walks with an exaggerated military strut, placing one claw so accurately in front of the other that he seems to have but one foot.

The returning squirrel tracks lead to trees, in the upper crotches of which is the home, a huge bunch of leaves, dry and brown, and on the way we see that the squirrel paused to dig through the snow and brought up and ate an acorn or a nut, scattering shells about the hole. I wonder if he is so keen of scent that he finds his food by smelling it through the snowy blanket. Once squirrel tracks led me to a small tree around which were strewn apple skins and cores and I found that the squirrels had stored apples there by wedging them into every crotch, even placing one in an abandoned bird's nest. The apples had decayed and dried, but that was of no consequence, as the squirrels wanted only the seeds.

Rabbit tracks reveal the warrens and connect each with every neighboring warren. They show that the "bunnies" are of a social habit, for no sooner is the snowfall over than straight paths are beaten from burrow to burrow by hundreds of little feet scampering to and fro, doubtless fetching and carrying the latest news from home to home. A network of rabbit paths fills the copses where food of buds and bark is obtainable. Woe to young apple trees unprotected from the sharp teeth! The native wild trees, however, seem to have put on a hard and rough bark im-



"A POOL . . . IS THE FOCUS FROM WHICH RADIATE HUNDREDS OF LITTLE FOOTPRINTS."

mune to attack of rabbits, but the higher branches are not so protected, as I discovered when I trimmed some and left them upon the ground. The next day I found the rabbits had skinned them of every vestige of bark.

I follow my partridge to the thicket where I see that he has dined on wild berries, dried like raisins on the bush, and also see that along the edge of the clearing the small winter birds have made a meal of weed seeds, thus saving me a lot of tiresome weeding in the garden next summer.

The above is my way of going hunting, for I would rather see how the wild

things live in contentment than to make them die in anguish.

I don't want to be without *THE GUIDE TO NATURE*. It is inspiring and helpful.—Miss Nina Secor, The Shelter, Forest City, Iowa.

I consider the science articles in *THE GUIDE TO NATURE* as the best of anything I know. Especially is this true of Professor Barton's astronomical notes.—Samuel L. Boothroyd, Fuertes Observatory, Cornell University, Ithaca, New York.

TO KNOW THE STARRY HEAVENS

The Heavens in February.

By Professor Samuel G. Barton of the University of Pennsylvania.

THE appearance of the sky in the early evenings of February is unquestionably more beautiful than that of any other month of the year. This is chiefly due to the presence of Orion, the finest of all constellations, at its best in the southern sky. Seven of the ten brightest stars ever visible

at B, nearly directly overhead. Scarcely less brilliant are Rigel at C and Procyon at D. The other of the seven mentioned are Betelgeuse at E, Aldebaran at F and Pollux at G. The three not seen are Vega, Arcturus and Altair. There are forty stars brighter than the 2.0 magnitude in the whole sky, of

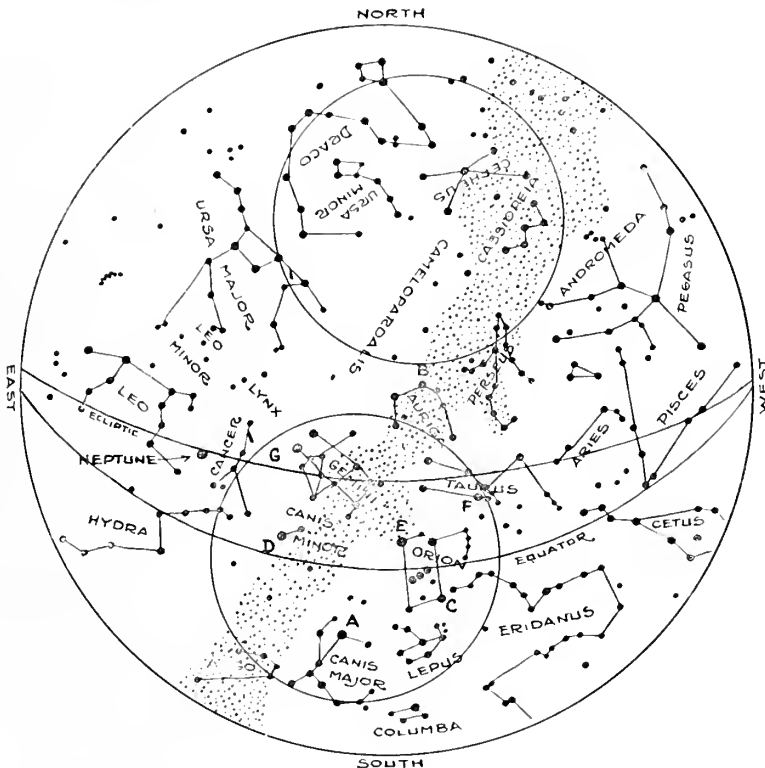


Figure 1. The constellations at 9 P. M., February 1. (Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.)

here are now visible. Sirius, easily the which thirty are visible here at some brightest of all of the fixed stars, is at time. Twenty-two of them are now A, Figure 1. Capella, a very close rival visible. Of these thirty, five are in the of Vega for the honor of being the constellation of Orion, four in Canis second brightest star visible here, lies Major, three in Gemini and two in

Taurus. Thus Orion and the adjacent constellations contain half of these stars. The only other constellation which contains more than one is Ursa Major, which has three. This constellation is also visible now. In October only ten of these bright stars were visible. We also have the Milky Way crossing the heavens through the zenith. Many of the brighter stars are found near the Milky Way.

On Figure 1 have been drawn two circles of equal size. The southern one is redrawn as Figure 2. In it are contained as mentioned above fifteen stars brighter than the 2.0 magnitude, which is half of all that are ever seen here. The circle has a radius of about thirty degrees, and contains an area equal to nearly an eighth of that of the whole map and a tenth of the entire sky ever visible here, or one-fifteenth of the area of the entire celestial sphere. This means that this circle is more than eight times as rich in these brighter stars as the rest of the sky.

In Figure 2 this very important region is redrawn. The numbers on the stars indicate the order of their bright-

ness as 2.0 magnitude. The north star or Polaris is the brightest star in the circle. There is thus a very great difference between the brilliance of the stars in the north and those in the south at this time. It is this brilliance of the southern sky which helps to give the impression that the stars shine much more brilliantly in winter than in summer. There are actually more bright stars to be seen without regard to the condition of the atmosphere.

* * * * *

The Planets.

Neptune is the only planet whose position is such that it is within the limits of our map. This planet cannot be seen with the naked eye. No planet visible to the naked eye could be shown on these maps since July last. This, however, is the last month in which this will be true, for both Jupiter and Saturn are just a little beyond the eastern horizon. They can be seen before midnight now and will be within the limits of the map next month. From that time we shall have at least one of the brighter planets visible until the end of the year. Neptune becomes an evening star February 3. Uranus becomes a morning star February 9 but remains close to the sun for several months. Jupiter and Saturn are in the constellation Virgo and Mars in Libra. At the end of the month Mars will be just north of Antares, the star whose name means the rival of Mars.

* * * * *

Jupiter's Satellites.

Those who have small telescopes and who have been interested in observing the motions of the satellites of Jupiter will find them interesting on the mornings of February 7 and February 23. On the first date, the first and second satellites are eclipsed at the same time from 1:56 to 4:21 A. M. Eastern Standard Time. It is on the morning of February 23, however, that they are most interesting, as many things happen then. First satellite three comes between the sun and Jupiter at 10:32 P. M. Eastern Standard Time February 22 so that we see its shadow begin to cross the planet. At 11:29 the shadow of satellite two begins to move across the planet for a similar reason. The four brighter satellites themselves are still visible. At 12:10 A. M. satellite one enters the

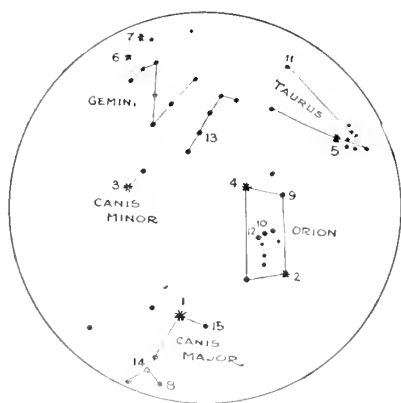


Figure 2. Orion and his neighbors—the finest section of the sky.

ness. Number one is Sirius, the brightest, and fifteen to the right of it is Beta Canis Majoris, which is a trifle brighter than 2.0 magnitude. The names of the stars to seven inclusive are Sirius, Rigel, Procyon, Betelgeuse, Aldebaran, Pollux and Castor. Number nine is Bellatrix. Individual names are not usually applied to the others.

The northern circle on Figure 1 is of the same radius and area as the one in the south which we have described. It contains not even one star as bright

shadow of Jupiter and becomes invisible by eclipse. At 12:59 the shadow of three completes its transit. At 1:14 satellite two comes between us and Jupiter and begins its transit across the disc of Jupiter. It can be seen then

succession, one, two, three four from right to left. The numbers are applied to the satellites in order of their real distance from Jupiter. Satellite five, however, discovered since these, is closer to the planet than one.

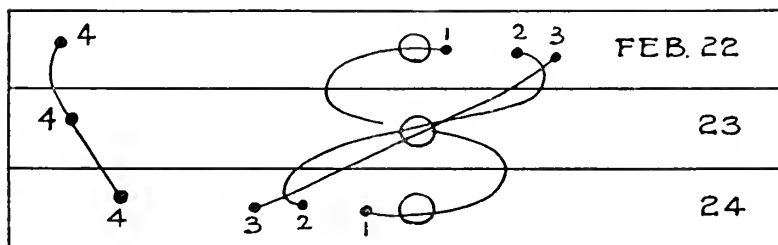


Figure 3. The positions and motions of Jupiter's satellites. Three disappear on February 23. The open circle represents Jupiter.

with difficulty if at all as it is of nearly the same color and brightness as Jupiter itself. The shadow of two is still on the disc. It completes its transit at 2:05. At 2:18 satellite three begins to cross the planet, leaving satellite four alone visible. This condition continues until 3:12, when satellite one reappears. Before completing its eclipse the satellite passes behind the planet as seen from the earth and is occulted, as this is called. Hence it reappears after its occultation. At 3:42 the transit of two ends and at 4:09 the transit of three ends and all four satellites are again visible. It is not very frequently that three satellites are invisible at the same time.

Figure 3 shows the positions of the satellites at 2:30 A. M. February 22, February 23 and February 24, with lines indicating the motions of the satellites in the interval. The positions are as they are seen in an inverting telescope. Satellite one for example first makes a transit on February 22, then is eclipsed and occulted as we have described on February 23, and then makes another transit on February 24. Satellite two moves more slowly and only makes the transit we have described on February 24 in changing from the right side of the planet to the left. The same is true of satellite three. Satellite four moves very slowly and has changed its position but slightly in the interval. On February 22 the order of the satellites left to right is one, two, three. On February 24 the order of these three satellites is just reversed and we have them arranged in regular

How Much Silver Has Man Dug Out of the Earth?

BY CHARLES NEVERS HOLMES, NEWTON, MASSACHUSETTS.

All of us have heard and read a great deal about silver, and all of us are well aware that the kind of silver which most of us possess does not purchase as much of the necessities and luxuries of life as it used to. For many years in our country silver has not been as popular as gold, but it was once a very popular metal throughout the world, and the "pound sterling," the British monetary unit, was originally an actual pound's weight of silver. It is possible, inasmuch as nature is more lavish with silver than with gold, that man discovered and used the former metal before he discovered the latter. However that may be, gold is mentioned first in the Holy Bible in the second chapter of Genesis—"The whole land of Havilah, where there is gold." Later, in the thirteenth chapter of Genesis, silver is mentioned, indicating that it was valued highly—"And Abram was very rich in cattle, in silver, and in gold."

Some of us possess more silver than others of us, and annually it is announced that each of us should possess a certain amount of silver coinage. As we all know, silver is much lighter than gold, gold being about one and eight-tenths times heavier than silver, although more pockets have holes worn in them by silver than by gold. Occasionally a silver coin will tarnish in our pocket—that is, if it stays there long enough to tarnish—and this tar-

nish is caused not by pure air but by the presence of sulphur, forming silver sulphide upon the coin's surface. As we also well know, silver is hardened by combining with it a small proportion of copper, the half-dollar containing about nineteen and three-tenths per cent of alloy, the quarter-dollar nine and six-tenths per cent, and the dime about four per cent. The commercial ratio of silver to gold, the comparative values of these two metals, was about fifteen to one in 1700, and this ratio remained fairly constant until 1874, when it became sixteen to one, the value of silver compared with gold decreasing thereafter. In 1792 Congress passed the first coinage act, the ratio between silver and gold being placed at fifteen parts of silver to one part of gold, but in 1834 this was changed to sixteen to one.

Silver has no doubt been known from prehistoric times, and man has dug it out of the earth for thousands of years. Of course only small amounts were obtained at first, but now every year millions and millions of fine ounces are mined. In our own country the states of Utah, Montana, Idaho and Nevada produce, respectively, the most silver, the United States producing annually about 75,000,000 ounces. That is, the United States produces about forty-six per cent of the total amount of silver mined by the world. Man has been mining silver for thousands of years—now, how much in all has he dug out of the earth? Statistics have been published respecting the amount of silver produced in the world since the year 1493, about the time when Christopher Columbus discovered America. These statistics approximate the amount at 12,400,000,000 fine ounces. However, a large amount of silver must have been mined before the year 1493, although much less than afterwards, probably about one-third as much. And, accordingly, an approximation of all the silver which man during his existence has dug out of the earth amounts to 17,000,000,000 fine ounces.

Zoological Sanctity.

One of our jocose contributors tells us that he knew of a "certain fellow" who said he would like to do some large clean act before he died. It was suggested that he wash an elephant.



Nature the Manifestation of God.

The Reverend Charles Morris Addison, a Trustee of The Agassiz Association and formerly rector of St. John's Episcopal Church of Stamford, but now of Cambridge, Massachusetts, sends us a marked copy of an English magazine, "St. Martin-in-the-Fields Review," and calls our attention to an article on "The Language of Nature" based on the text. "We do hear them speak in our own tongues the wonderful works of God." The author declares that the reason why so many nowadays do not see and know God is because of specialization:

"Each speaks his own peculiar language, and shows but scant understanding of what his neighbors in other walks of life are trying to say. It is the great tragedy of our modern life that though our civilization has made us so universally dependent on each other, we seem to find it harder than ever to understand one another's speech."

He says the remedy is to be found by going to nature:

"But first we will turn to an ancient non-human language which nevertheless may have a very modern message—the language of nature, God's revelation of Himself in the world apart from man."

After an extensive development of that aspect of the matter he concludes with the following:

"Even the very effort to rely on God sometimes seems somehow to bring about its own defeat. But nature can help us to recover our sense of proportion by taking our thoughts away into a world where human activity has no place at all. The lily, the sparrow, or the sunset can give us a new idea of God, just because man has nothing whatever to do with their existence, their beauty or their goodness. Most of us can gain a new peace from the sense of our own littleness as we gaze on the stars on a clear night.

Now all the heavenly splendour
Breaks forth in star-light tender
From myriad worlds unknown;
And man, the marvel seeing,
Forgets his selfish being
For joy of beauty not his own.

"God made the stars also. It is from reflecting on the non-human works of God that man can find peace in the recognition of his own littleness.

"Therein lies the supreme need of country holidays for dwellers in the town. Our industrial civilisation makes faith difficult, just because it cuts man off from nature and fills his world wholly with man's works and man's affairs. We walk on man-made pavements among man-made buildings, the very heavens pierced by man-made chimneys and dimmed by man-made smoke, and man's business fills our thoughts. It is city life cut off from material nature which makes materialists. Country-folk find it easier to believe in God, because they are less tempted to believe wholly in themselves. The ugly philosophy called naturalism was born of familiarity with men's machines, not with God's nature.

"The language of nature speaks to us in two great parables, the parable of natural growth, and the parable of utter dependence on an environment we did not make and cannot alter. Perhaps they are the parables which our modern world most needs to learn afresh, if it would really understand itself."

"Study Nature not Books."

Louis Agassiz's favorite slogan that in 1873 he placed in conspicuous position in his laboratory at the Island of Penikese is in danger sometimes of being misunderstood. Agassiz was a lover of books as well as of nature. He and his pupils used books in their studies and he himself wrote delightful books. He was not only an observing scientist but a graceful literary por-trayer of what he had seen. What he meant was that the end of scientific study is to understand nature, and books should no more be studied as an end than the microscope or the net or the rubber boots used in collecting aquatic objects. Books are right when they are a help in studying nature, but the reader is not an apiarist because he has read Maeterlinck's "The Life of

the Bee," nor is he a chemist because he drinks oxygen and hydrogen in a chemical compound.

To some of our enthusiastic contributors the editor of this magazine has had frequent occasion to return articles because they were too bookish; that is, they were evidently copied from a book and no personal observation had been made. If an original observation is offered and a helpful reference made to a book, that is right. No matter how much one loves books, the more love the more reason for keeping them in their place, and a magazine has a positively distinct point of view. Now and then a snappy quotation may be made from a book but only when it is evidently an inspiration to the direct study of nature. So when you write to this magazine it should be the outcome of Agassiz's saying, "Study nature not books."

There is an English church where a box hangs in the porch. It is used for communications for the pastor. Cranks put their notes in it, but occasionally it does fulfil its purpose. Recently the minister preached, by request, a sermon on "Recognition of Friends in Heaven," and during the week the following note was found in the box: "Dear Sir—I should be much obliged if you could make it convenient to preach to your congregation on 'The Recognition of Friends on Earth,' as I have been coming to your church for nearly six months, and nobody has taken any notice of me yet."—Christian Register.

I would like to have a little less, or much less, destruction and more resources for construction in America. I would like to have less of toil to maintain armies and navies and more of play to hearten the American people. I don't believe the best of success comes out of the constant grind. I would like an America where there is some becoming leisure and opportunity for recreation, not for just a few people, but for a fortunate American people in which all may participate.—President Harding.

Seed of the trailing arbutus can be obtained by tying glass vials over the blossoms.

EDITORIAL

The Lovable Root Family.

Human beings are more interesting than honeybees. For me that statement implies much because I am intensely interested in honeybees.

With all my affection for the ordinary things of nature below mankind I have none of the spirit of Henry David Thoreau, who would retire from the haunts of men and live as a hermit

they are by far exceeded by the Root family's personal diaries. I know that some persons rather deplore the fact, as they refer to it somewhat jocosely, that so much of the magazine is occupied by the Root family's memoirs. To me, however, the department and its allied articles are the most charming, heart touching and inspiring of the entire magazine. I find from my own ex-



MR. A. I. ROOT AND WIFE.
Mrs. Root recently died.

by a Walden Pond. I know a student of nature that is fond of saying that solitude is a most enjoyable thing, if you have with you plenty of people to whom you may communicate those joys. Notwithstanding my enthusiasm for nature, I have recently announced a lecture of which the subject is, "Girls, the Loveliest of All God's Creations."

When I am asked, "What is the most interesting thing you have discovered about honeybees?" I reply, "The Root family of Medina, Ohio." All our apiarists know that Medina is the world's center for honeybee interests, and the center of Medina is The A. I. Root Company—in fact all the industry of the town is embodied in that corporation. At Medina is published a magazine known as "Gleanings in Bee Culture," filled from cover to cover with valuable information and suggestions rich in commercial possibilities in regard to honeybees. But excellent as all the magazine's departments are,

perience that when "Gleanings in Bee Culture" arrives I without hesitation turn to "Our Homes" department and there read delightful, characteristic, heartfelt references to little things and big things, to big Roots, ordinary Roots and little Rootlets, that please me better perhaps than any other part of the magazine.

But perhaps the most touching of all the matter published in recent months is the affecting manner in which Mr. A. I. Root refers to the death of his wife. The January number contains no ordinary obituary notice. It has something more than that. The first is eulogy of women in general and then Mr. Root tells of the first meeting with Sue, a girl of only fifteen, whom he invited to become his wife, but she strongly insisted that she must complete her education.

Reading on a little further we find that the article was written a few days after the death of Mrs. Root, who was

the Sue that had been with him, sharing all his joys and sorrows for many, many years.

In another department we find, "Mother," written by her daughter, Constance Root Boyden. In a similar charming way, beginning with the "plaything drawer" in mother's kitchen, we learn that that mother is gone.

This portrayal of every detail of the family experience month after month but few families could bear with credit, yet after many years of reading about the smiles of the children, grandchildren and the great-grandchildren, of the loving families, even of the little vexations and impatient words, the reader becomes more and more in love with every one of the Roots. They are unique in their family relations. They are unique in journalism. In this hasty reference it is not possible to do justice to this particular number, but I believe that every reader of *THE GUIDE TO NATURE* will find it not only interesting from the entomological aspect, but for its human touches, if he will send for a copy. If the reader does not become interested in the most attractive of all insects he will learn to love the most attractive of all families in public life, the Roots and all their branches, in Medina, Ohio.

Authors Rather Than Books.

Mr. Lewis R. Horton of Spokane, Washington, is appealing to one thousand educated men and women for a list of one hundred best books that "every American, between the ages of twenty and forty-five, ought to read." He has a list of best books prepared long ago by various persons but covets a list selected by educated men of today. He also tells us "that folks do not like to read books in sets."

We wonder as to the age limit—twenty to forty-five. The best reading age is before twenty and after forty-five. The years between should be devoted to the active business of life. For the one who is not strictly a professional user of books there should be less reading between twenty and forty-five than at any other part of the active life. The years before twenty are the cumulative years, and those after forty-five are the best meditative years.

If Mr. Horton is right in his statement that folks do not like to read books in sets then folks are wrong. We rather question the accuracy of the statement.

For example, along our own line of pursuits, the study of nature, the required list of a hundred books more or less could be selected from a much smaller number of authors. It would be, for example, ridiculous to select one book from Henry David Thoreau, Richard Jefferies, John Burroughs and William Hamilton Gibson and assign a part of the list to the minor rehash writers. Those authors and many others are fountain heads. A few fountain heads can flood the territory. What shall we say of one who would select Emerson's "Nature" and advise that the other books of his set should not be read?

Frequently we have a request for "the best book" on a particular subject of nature. To the editor that question has little meaning. I believe the best modern writer of bird books is Frank M. Chapman but who will venture to say which of his books is the best? He has different types adapted to different types of people, age and uses. For popular, humanizing books on nature I think that most of us would put Ernest Thompson Seton at the head, but I do not believe that he himself could select his best. "Wild Animals I Have Known" first made his fame. Everything else followed easily. But for the technical naturalist Mr. Seton's masterpiece is his large work in two volumes, "Life Histories of Northern Animals." We who make close study of the four-footed animals value that as in some respects better than "Wild Animals I Have Known."

To go back to some of the earliest writers. Take Thoreau, for example. Many people point at "Walden" as his best book. It is and it is not. For the one who can get the most out of "Walden" then for that person it is the best, but the average naturalist rather than the philosopher gets far more out of "Journals." Yet no real lover of Thoreau would venture to throw "Walden" or the "Journals" ahead. We must have both to understand what Thoreau was teaching.

"What is the best book on insects?" "What is the best book on wild

flowers?" These questions and allied ones are susceptible of many different answers according to the age, location, temperament and attainments of the one who asks the question. Here in our laboratory Howard's and Comstock's and Vernon Kellogg's books on insects are in constant use, but for the beginner I doubt whether they are the best, and surely for a handbook to take afield each of the three is out of place.

I have several times started to make for the naturalist a list of the best books but have come to the conclusion that if such a thing can be done it cannot be by President Eliot's foot rule nor by Mr. Horton's specified number of titles but must be by authors. Even so I should probably find that I had listed the books that I myself use most frequently and it takes only a moment's thought to realize that they are not the best for everybody; they are only the best for me and my needs.

What a multitude of good books there are pertaining to the stars. We have many of them here at ARCADIA, but I would not venture to point out the best. Better than any book is our department conducted every month by Professor Barton. Go to the stars themselves and watch them or, as Agassiz would advise, "Study nature." But the book that did not help me to distinguish Orion from the Big Dipper but did inspire me with the wonders of the subject is Flammarion's "Popular Astronomy." I devoured that book with a feeling of inspiration and elation that comes but once in a lifetime. Reading it was a conversion from indifference to the keenest kind of interest. In my enthusiasm I have talked with other astronomers only to have them casually and coolly remark, "Yes, he is right from the popular point of view." So I may have needed popularizing rather than technicalizing.

In the matter of honeybees, in view of our large apiary here at ARCADIA, we have many inquiries, "What is the best book?" Of course the best book to inspire one for life is Maeterlinck's "Life of the Bee," but I should shock practical beekeepers if I should say that to them. They would select "The A B C of Bee Culture" published by The A. I. Root Company, Medina, Ohio, and I would shake hands heartily with these professional beekeepers and

say, "I agree with you." Thus in one breath I say one thing, then another. The reason is that when I grasp the professional beekeeper by the hand I look at things apiarian from his point of view. But suppose a minister should come here and say, "I want an inspiring book to help me in arousing my people in a sermon on the wonders of a honeybee." It would be absurd for me to recommend "The A B C." He does not want to know about frames and hives and supers; he wants to know about the life of the living thing with which to inspire other living creatures.

Look at horticulture and agriculture. The subject is too big even to be touched. If anybody should come into my office and want to know the best book on these subjects I should want to get that person's complete biography. How different would be the advice to a practical worker in the greenhouse, to a farmer, to a school-teacher, to a lawyer. But after all isn't this attempted selection of the best and the worst simply an ego, a self-centered point? It is about equivalent to my calling up the family physician and telling him, "I want to take a dose of medicine. What is the best?"

Mr. Horton, you place me in the position of that physician when you write to ask for a list of best books. What is the matter with you? I must find out that before I can intelligently reply. I must know your specific need before I can write the prescription.

Only two chimpanzees are known to have been born in captivity. The first was in Cuba in 1915, the second in New York in the summer of 1920. The latter, at birth, was sixteen inches long, weighed three pounds and was nearly hairless. It lived only a few days.

"I am sorry," said the magazine editor courteously, "but we are not accepting any short stories now."

"But the scene of this story," said the confident contributor, "is laid in a place that nobody ever heard of, and is written in a language that no one can understand."

"Then why didn't you say so before?" exclaimed the magazine editor, as he grasped it eagerly.—Life.



Additions to Our Membership.

Corresponding.

Miss Irene Matthews, Louisville, Kentucky.

Miss Margaret Ramsay, Boston, Massachusetts.

Miss S. Crissy Brown, Stamford.

Mr. D. C. Bartley, Zillah, Washington.

Sustaining.

Mr. Lorenzo D. Armstrong, Riverside, Connecticut.

Mr. Pierre R. Bernard, Nyack, New York.

Public School 164, Brooklyn, New York.

Mr. Herman S. Piatt, New York City.

Miss Constantine E. Johnston, Greenwich.

Mr. W. W. Heroy, Stamford.

Mrs. L. P. Yandell, Greenwich.

Mrs. C. W. Parsons, New York City.

Mrs. John Walker, Riverside.

Mrs. Benjamin T. Brooks, Sound Beach.

Mrs. G. C. St. John, Greenwich.

Mrs. Raynal C. Bolling, Greenwich.

Miss Mary E. Strong, Orange, New Jersey.

Sustaining and Honorary.

Mr. Theodore H. Cooper, Batavia, New York.

Philanthropic People, those who care for the welfare of others, especially the young folks, are cordially invited.

What George Washington said (in his farewell address):

"Promote, then, as an object of PRIMARY IMPORTANCE, institutions for the general diffusion of knowledge."

Death of a Sustaining Member.

Miss Elizabeth D. Ferguson, South Street, Stamford, Connecticut, died at her home in that city on Friday afternoon, December 30. She had been for several years a Sustaining Member of The Agassiz Association and a liberal contributor to our Cause. We quote the following from "The Daily Advocate" of Stamford:

"Miss Ferguson has been active in the affairs of St. John's Episcopal Church all her life and has been a frequent and generous contributor to the charities of the church. She was the youngest daughter of John Ferguson and Helen Grace Morewood and had lived in the big stone house on South Street the greater part of her life. She was the youngest of eight children.

"Miss Ferguson has been closely associated with all the work of St. John's parish since her childhood and for a number of years was most active in the affairs of the many church societies. She has been deeply interested in the work of the chapels of the church, and took an exceedingly large interest in St. Luke's and St. John's church house.

"She was a frequent contributor to the missionary work of the church, both domestic and foreign. Miss Ferguson was looked upon with veneration and affection by her numerous younger relatives, and it was her delight to have one or more of them visiting her most of the time in her big house. Her sister, with whom she had lived, died several years ago.

"Miss Ferguson's charitable work was always done in the least ostentatious way. One of her recent gifts to St. John's Parish was the lot at Suburban Avenue and Main Street. She purchased the lot some years ago to protect the church property from business encroachments and deeded it to the church a year ago."

Reasons for Uniting as Well as for Separating.

Our laws require that married people seeking a divorce must supply full and explicit reasons that are usually widely diffused through the public press. When this country was divorced from England, the reasons and the necessity were plainly stated in the preamble to the Declaration of Independence:

"When in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinion of mankind requires that they should declare the causes which impel them to the separation."

Why is a publication of these reasons always a part of the separation? Why not for union? Why does not a young woman, for example, tell us why she likes the groom, and the bridegroom tell why he likes the bride?

Our incorporation, The Agassiz Association, is for mutual helpfulness. Each Member for the benefit of all the others tells what he has seen in nature. Now comes one of our delightful young women, nineteen years of age, who has been a Member of The Agassiz Association since 1915 and has told us many of her observations of nature, and who now tells us why she has accepted as her husband Count Charles Phillippe de Bruche.

For all prospective brides, and bridegrooms too, here is an example. It will save many puzzling questions on the part of friends, such as: "I wonder what she could have seen in him."

Winifred Sackville Stoner, Jr., is famed the world over as the youngest author in *The Authors' League of America*. When a bride introduces the new custom of telling the public why she selected the groom, it becomes interesting to know who she is. We therefore gladly publish a little account of this girl who came to us as a Member six years ago after considerable correspondence and previous interest.

Winifred Sackville Stoner, Jr., (daughter of Colonel James B. Stoner, U. S. Public Health Service, and Dr.

Winifred Sackville Stoner, author of "Natural Education" and other works on child training) is the youngest author in *The Authors' League of America*. At the age of nine she passed college entrance examinations. At twelve she was declared by Dr. M. V. O'Shea of the University of Wisconsin to know



WINIFRED SACKVILLE STONER, JR., BECOMES A COUNTESS AND TELLS US FELLOW MEMBERS OF THE AGASSIZ ASSOCIATION THE "REASONS FOR HER CHOICE."

more than the average college graduate. She toured the world at five years of age, and lectured in Esperanto. At sixteen she appeared as a public lecturer in the Lee Keedick Lecture Bureau, appearing with such men as Sir Oliver Lodge and John Drinkwater. She published books before she was six years old. At the age of nineteen she is the author of a dozen books, many magazine articles, songs and scenarios. She has won prizes for high diving, for horsemanship, for fencing and other athletic sports. She was listed among the notables of America's *Who's Who* before she was sweet sixteen, and she has been as sprightly in love as in let-

ters. At the age of nineteen she became the bride of Count Charles Philippe de Bruche of Paris. Of course he was the man of her own choice.

Hating the publicity which has been thrust upon her from babyhood because so many educators were interested in what she accomplished through play for a purpose, she has tried to keep her marriage a secret. She and her husband have been motoring in the west, and are now touring the south, Winifred acting as chauffeur.

To the many educators and parents that have been interested in the career of this so-called prodigy, and are curious to learn what manner of man she has selected, she presents the following reasons for her choice:

"1. I like people who have travelled and are not narrow-minded. My husband has been a globe-trotter, a fact that has made him broad in his views of the world and has given him much subject matter for discussion and comparison.

"2. I have always enjoyed the companionship of boys and men older than myself because I believe that girls develop in mind as well as in body sooner than boys. Naturally any girl likes a man who is superior to herself in physical and in mental strength.

"3. From babyhood I have admired athletes and I am fortunate in having a husband that combines physical strength with mental. He loves the sports that I love—swimming, rowing, horseback riding, boxing, fencing, tennis, golf, skating, dancing and long walks in the woods. He is also an expert at playing my favorite game of chess. I am therefore supplied with a playmate for indoor amusement as well as for games in the open.

"4. As a lover of books I am drawn towards those that like my book friends. My husband and I both like the same poets and the same writers of history, biography and science. He is familiar with the literature of many countries and is able to read and speak a number of languages. As a great psychologist has said: 'If one grows weary of thinking in one language, use another to refresh the mind.' We need not grow weary of our thoughts when we can talk together in different tongues.

"5. And most important of all I love him. After all what does it matter how rich or poor, how great or small a man may be if he wins a girl's love?"

Marriage has not killed the love of writing in this young author. She has recently written a poem on "The Unknown Dead" and has finished a new novel called "Which."

A Few Misnamed Trees.

BY WILLIAM H. HUSE, MANCHESTER, N. H.

"A woman, a dog and a walnut tree;

The more you beat them the better they be."

This disgraceful couplet was quoted to me some years ago by an Englishman as an old English proverb. I hope that my ancestors who came from that land of "beer, beef and the Bible" did not take its advice.

But it is not my purpose to moralize. I only want to prove that the English settlers in this land of the free, where every one is as good as every one else and usually thinks that he is a little better, thought that they knew a walnut tree when they saw it. There were a few nut trees growing near the New England coast and the settlers, fearing that Adam missed some of the trees when he named the animals, gave them suitable appellations. The butternut did not appear to belong to the class of trees that needed beating and its fat content suggested the name above. A variant of this was "oil nut," with the uneducated, "ile nut."

The trees that reminded them of their walnuts were the hickories, and shagbark (or shellbark) walnut and pignut walnut were the names given to them. Those names still persist in New England. As a boy I learned them from the previous generation. On a recent hike I picked up a few pignuts, showed them to the teacher of botany in our local high school and said, "These are pignuts. What do you call the tree on which they grew?"

"Walnut," came the answer.

"You were brought up in New England, were you not?"

"Yes."

"I thought so."

A friend, a native of Pennsylvania, visited the young lady who later became his wife, at her home in Connecticut. She had often told him of the

magnificent walnut tree that stood in her father's yard and, after the greetings were over, he looked about for the walnut. Not seeing it, he asked for its whereabouts.

"There it is," said the young lady, pointing to a large tree near the house.

With a look of superiority he said, "That isn't a walnut. It's a hickory."

We blue-blooded (and cold-blooded) New Englanders dislike to acknowledge that any other section of the country is in the slightest degree superior to us, but in this matter we must relinquish the front seat to the rest of our domain, where the hickories are called by their correct names.

The tupelo tree, known also as pepperidge and sour gum in some sections, is called hornbeam in some parts of New England, while the true hornbeam is given the name of blue beech. Whether this error is confined to our northeast group of states I cannot say. It may be that we Yankees are not the only offenders.

Sililoquy Suggestions.

BY THEODORE H. COOPER, BATAVIA, N. Y.

I wish that I could find some one here who could understand the aesthetic values of such common things as the grass under our feet. Last summer I used to lie under the pear trees at the back of my house for no other purpose than to watch the insects busy about their affairs on the ground. I came near visiting a strange land then, a world totally unknown and unsuspected to most persons. How unfortunate! If a more general interest in natural things were developed there would be fewer economic and political disturbances.

* * * * *

On my way home one day this fall I was surprised to see a large shimmering patch of green on a plowed field in the distance. Upon investigation, it proved to be made by large green flies so numerous as to cover the ground like a mat over the space of about half an acre. When disturbed they rose in a cloud, buzzing alarmingly.

* * * * *

When about twelve years old I used to spend considerable time in fishing for rock bass and sunfish along the rocky shores of Indian River in the northern part of this state. I sometimes would put my head beneath the

water to look under the shelving rocks where I saw the "rockys" floating motionless, and often marveled at the sight. I used to wonder if water was not solid air! This experience has just been recalled by reading those lines of Whitman's:

"And the fish suspending themselves so curiously below there,
And the beautiful curious liquid."

* * * * *

While with Mr. Mathes on a fossil hunting trip this summer I saw grooves in the surface of a rock showing where a glacier had left its footprint, in the sand of time, as it were.

How much has happened since that record was written, and yet how little has been recorded!

* * * * *

Those who like to speculate as to what the people on Mars look like will be interested to know that I have, by the aid of the glass, seen a most remarkable creature. A hideous, six-legged monster, with jaws crossing each other like a pair of shears or grass sickles.

Its eyes projected from the sides of its head, and its body was covered with a wonderful suit of armor. I was frightened at its appearance. I have never heard of even a Dinosaur that is more repulsive in aspect, and this creature itself I have not seen in any book of natural history, although I have heard that it belongs to a ferocious class of insects called Cicindelidae.

* * * * *

On both sides of Indian River (New York) there are high sandstone ledges that in many places have long since fallen and weathered back so that there is now a strip of land of considerable width between the shore and foot of the bluff. At other places the rocks rise perpendicularly out of the water. Small underground streams sometimes find an outlet on the face of these cliffs, and on especially cold days, when everything else is frozen, these streams continue to flow. The vapor rising from them can be seen in the cold air like that from a hot spring.

People who only go out walking in fine weather miss much; the best times to walk, in my opinion, are in the snow, the wet, and the storm.—H. Rider Haggard in "A Farmer's Year."



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IN THE MEADOW BROOK ON AN OUTING SIX MILES FROM CAMP.

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Avenue, New York City. J. Sperry
Kane, Vice-President.

I wish to express in writing what I
said to you verbally about my daughter,
Mary, upon her return from her
first summer at Camp.

It appears from my observations that
aside from the splendid time which
Mary seems to have had, the discipline,

training, and pleasant surroundings
and associations have been very bene-
ficial to her in many ways. I am espe-
cially well pleased that I sent her to
Camp, which, as you know, was mainly
due to your strong recommendation.

Permit me to thank you personally
for the efficient and careful manner in
which you arranged each small detail
for her departure to Camp, and her re-
turn from it with your special party.

This relieved me of anxiety and worry as to the safety of her journey.

With kind personal regards.

Mrs. E. Hayes, 582 Fifth Avenue, New York City.

I am very much pleased with the treatment and care given to Jeannette while in your hands at Camp during the past summer and feel that the benefits she derived from same will be lasting and have, I believe, made an indelible impression on her. I will be very happy to answer any questions that may be asked of me in connection with your work and methods.

Thank you for your many kindnesses in the care of Jeannette.

warm your heart greatly to have such affection from so many little girls.

Mrs. William Mitchell, Richmond Terrace, Irvington-on-Hudson, N. Y.

Most decidedly I wish to add my voice to the chorus of enthusiastic advocates of camp, and your individual care of my daughter Margaret. I am delighted with her physical improvement, but particularly pleased with her increased interest in sports in general, and in the added confidence and mental poise which she has gained. I am enclosing her application blank for next summer, and she is all but counting the hours until it is time to go back.



AN AMUSEMENT IN THE EARLY MORNING AT THE FARM.

Mrs. H. Durant Cheever, 150 West Fifty-ninth Street, New York City.

Immediately upon Zora's return we went to the Adirondacks for some time and I did not have the opportunity to tell you how pleased we were with the reports of her summer in camp. I feel this is an ideal camp and one which sets a very fine standard for others to follow. The discipline and high moral tone of the camp were so beneficial to Zora. To you, of course, we owe the opportunity of knowing of the camp, and in letting Zora go we did so because of our confidence in you.

It has been quite splendid to see the great affection these children bestowed upon "Daddy" Bigelow and it must

Mrs. Edward K. Cone, Colonia, New Jersey.

I wish to tell you how very grateful Mr. Cone and I both are to you for having included Margaret among your "daughters" and taken such good care of her. The Camp is all I had hoped for and much more. I fell in love with it and everybody there and my only regret is that I cannot be a camper myself.

Mrs. Charles W. Colby, Hotel La Salle, New York City.

Regarding your care of my daughter in Camp:

To my question, "What did Dr. Bigelow do for you at camp?" my

daughter answered, "He saw that we were happy." That tribute to your kind care is better than anything I can say.

The Camp was most satisfactory in its results and I thank you cordially for bringing it to my notice.

Mr. William D. Andrews, Quintard Avenue, Sound Beach, Connecticut.

I should like to express to you my most sincere thanks for the care and attention you showed Susan and Polly on their journey to Camp this summer, whilst they were there, and on their return journey. Both of the girls had a wonderful time and have many times told us that you were most largely responsible for this happy state of affairs, and Mrs. Andrews and I are deeply indebted to you.

Mrs. John Colby, Stanstead, Province of Quebec, Canada.

I have been promising myself for some time the pleasure of writing to express my thanks and appreciation of what you did for my little daughter at Camp last summer.

I had heard so much about you beforehand—that you possessed a gift with children second only to Lewis Carroll; that you bewitched the littlest campers out of their first homesickness and fascinated big and little girls alike with your Nature talks and interesting woodland expeditions—so much in fact that it would have been difficult indeed not to have been disappointed when actually seeing you, having expected so much.

To say that my anticipations were more than realized is paying you a high compliment. But I could see that you were a very distinctive part of the Camp life. I saw also why you were called "Daddy Bigelow." Never was a *bona fide* daddy more besieged with affection than you seemed to be, and wherever you moved you were surrounded with girls, while a tactful word here or suggestion there helped to make the camp machinery run smoothly.

I am sure that Harriet will remember the astronomy she learned from you in such an interesting way that she probably did not realize that she was learning anything.

Dr. Colby and I will be pleased to enroll her with you for next summer.

Advice and Personal Aid to Campers and Their Parents.

Camps for boys and especially for girls are comparatively modern institutions. Most of these are still in the chaotic, formative, experimental stage. Sometimes magazine advertisements and other announcements of the crudest sort of camp convey the impression that these are as good and attractive as the old established and famous centers.

Camps have not been in existence long enough to make their merits known to the general public; probably Darwin was right in a broad generality on the survival of the fittest but one must also take into consideration his further teaching about the struggle for existence. It is during that struggle in the development of anything, especially of summer camps, that the inexperienced needs a friend.

Mowing machines and sewing machines have been in use long enough to become well established. Some other things are approaching that placid stage, notably cameras and automobiles. But flying machines, dish washing machines, aeroplanes and camps for boys and girls are still in an unsettled condition. Many methods are on trial; only a few have yet justified their existence. The experimental stage of anything is painfully trying. Many discouragements must be mingled with a few satisfactory phases.

Leaving that thought, let us consider another. The camp proverbially acts as a melting pot and as a developer of loyalty. There is in even the most inferior camp an admirable military or class spirit. In the crudest kind of camp the selective spirit soon develops. I have known campers, and indeed some parents of campers, who have cherished intense loyalty for a camp that embodied chiefly the primitive conditions of savagery. Such camps were devoid of all comforts and were handicapped with every possible hardship. Seemingly these hardships, like trouble and sorrow in a family, tend only to make the bond of sympathy tighter and stronger. Loyalty is commendable, but sometimes the object to which one is devoted is not commendable by the well-informed. To lavish affection on an unworthy object is a misfortune. Many a woman in her de-

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votion to an unworthy husband has learned that to her lifelong sorrow.

Closely akin to this experience is the feeling of every one who knows a good camp and hears praiseworthy loyalty and deplorable ignorance enthusiastically expressed for an inferior camp. Hardly five per cent of campers make a change by abandoning a poor camp for a better one. Once a camper always a camper and generally in the camp in which one started, the influence being largely personal friendship for the comrades in suffering or in joy. At this point enters the tremendous importance of an advisory friend, one that is not financially interested in any special camp but has surveyed the field and is familiar with camping conditions. Such a person is able to offer wise and disinterested advice.

It is strangely true that some boys and girls seem happier in a poor camp than in a good one. This appears to be a fundamental element of humanity in all conditions of life. Never yet have I been able to understand why some persons prefer to trade at a poor store or to eat at an inferior restaurant with prices no lower than at much better places. The person adapted to good camps and to association with good campers should be placed in the best camp. Men may be born free and equal, sometimes and in some things. Happiness is adaptation to environment. We may see this wide range of adaptation not only in business and in society but in recreational, educational and religious affairs. With a little play upon words one may well adapt Darwin's survival of the fittest to read the

happiness of the fitting. Sometimes a little help at the beginning goes a long way toward the fitting and the adapting. It is then, in the words of the funny cartoon, that "A feller needs a friend." Future success and happiness depend upon a good start, which means, first, to select the proper camp and, second, to get, as soon as possible, into the ways and social regime of that camp.

I offer advice and personal aid to those who are seeking the best summer camps. Those that like or can afford only cheap, inferior places of the kind have no need of an adviser. But parents who can afford the best, parents of discrimination, refinement and good taste, those that value their sons and daughters as the best gift that God has given them, those boys and girls that know nothing of camps but wish to get started right, should address Edward F. Bigelow, ARCADIA: Sound Beach, Connecticut.

Interest in Pebbles and Stones.

BY THEODORE H. COOPER, BATAVIA, N. Y.

Probably mineralogy would be more popular if stones were not often seen. If cobblestones were as rare as the eggs of the great auk, they would be more interesting to a certain class of people. Imagine the surprise of a man who lived in a world where rocks were so uncommon that if he were digging a well and should come upon a boulder, it would interest the entire community, the local newspapers would make an ado about it and every one would speculate as to how it got there, where it came from, etc. Or consider the excitement that would follow a shower

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of rocks, some containing shells, bones, etc. The specimens would receive careful study and every one would be talking about them. It is all too true that familiarity breeds contempt, and if the only stones on the earth were those which came out of the sky like meteorites, geology would be much more popular.

"The Strange Adventures of a Pebble" would then be a highly interesting subject. I was disappointed to find that the book under this title does not treat of the history of a pebble, but rather of the earth. Somewhere I have read the story of a lead pencil, how the graphite was taken from the mine and made into a pencil. The title of this book led me to think that the author had written a similar story of a pebble, how it had been worn out of the strata and perhaps transported by a glacier or otherwise to its present position. I imagine that some green and red sandstone pebbles which I picked up as I passed a railroad track while out "naturalizing" the other day could tell a remarkable story of their adventures since they were cut out of nature's warehouse of rock.

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Dr. Edward F. Bigelow,
Sound Beach, Connecticut.

My dear Dr. Bigelow:

In your visits of the last three years to Briarcliff I feel that you have done much through your excursions with the girls, your walks and your lectures with the lantern slides to develop in them a love of nature and the wonders of outdoor life, but your lecture last week with the microscope projections quite transcended anything which you have done for us heretofore. In fact it seems to me one of the most important scientific achievements that has come under my notice.

If you can reveal the secrets of the microscope to large audiences of young people as you did for us you will certainly be making a great contribution to scientific teaching. I wish you all success in developing your work along this line!

Yours very sincerely,
(Signed) EDITH COOPER HARTMAN.

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The Guide to Nature

Vol. XIV March, 1922

No. 10



EDWARD F. BIGELOW

Managing Editor

Published Monthly by **THE AGASSIZ ASSOCIATION**
ARCADIA: SOUND BEACH, CONN.

JUN 1 1922

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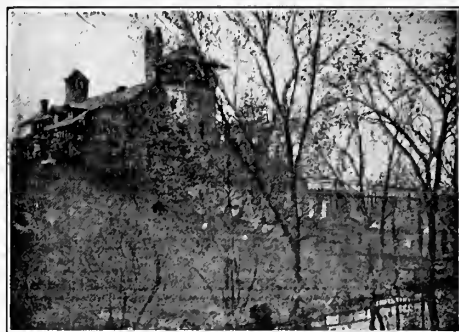
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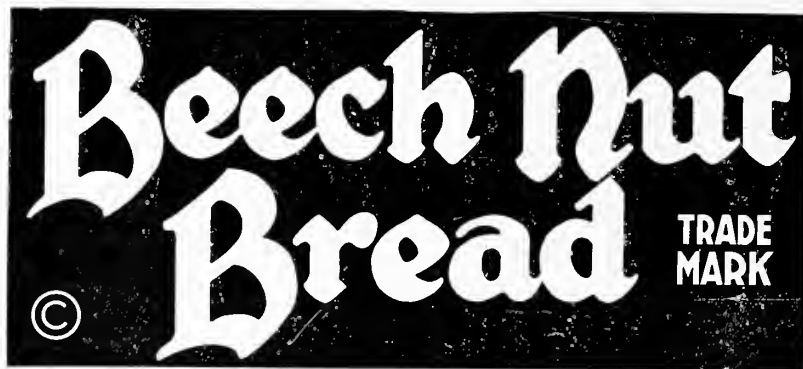
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—The Passing Show (London).

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of art. It would seem as if every lover of the great outdoors—and who is there that does not belong in that class?—would be glad to accept the invitation to send for a free copy. When our readers and friends do that, will they not kindly mention *THE GUIDE TO NATURE*? In giving this notice we have a kindly disposition towards the Dreer house and toward every one of our readers. All we ask in return is that you will reciprocate and speak kindly of us.



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The stormy winds of March swept through
Bare boughs on every hand,
Where now the magic of the May
Has brought us fairyland.

—Emma Peirce.

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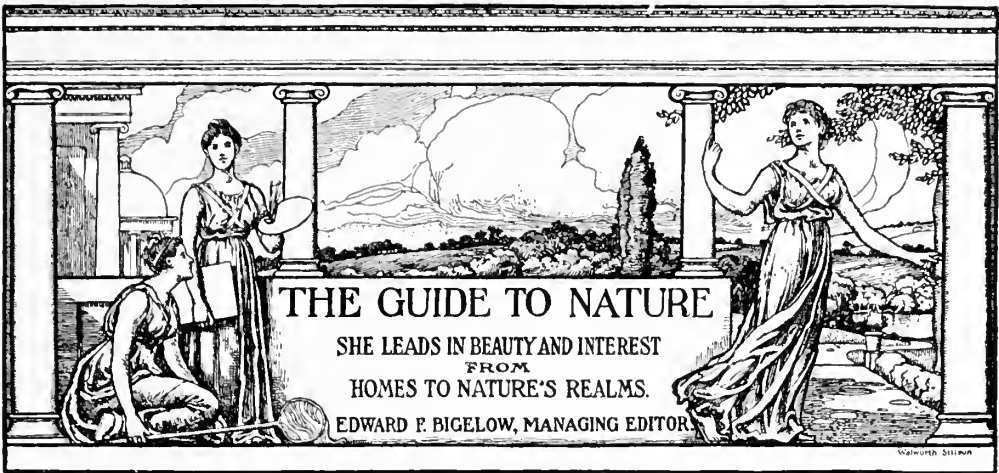
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Single copy, 15 cents

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Volume XIV

MARCH, 1922

Number 10

THE COLONY AT SOUND BEACH, CONNECTICUT, WHERE DR. EDWARD F. BIGELOW DISPENSES HOSPITALITY AND KNOWLEDGE.

From a page illustrated article by Winthrop Packard, in The Boston Transcript, January 7, 1922.

WHO shall find Arcadia, the place where ideal rustic simplicity and contentment prevail? Long ago the poets of the Peloponnesus sang of its joys. The songs remain, but the Arcadia of ancient Greece has gone with the Greek poets, never to return. Yet we have a new cult every few minutes and one of the latest of these is the cult of nature worshippers. The novitiate in this requires some knowledge of the birds, the flowers, the stars, the tiny creatures that sing in the grass and the marshy pool, and surely the novice must go back to Arcady for these. Hence we have the byways of the country spattered with bird watchers and flower finders and at night we stumble over the star gazers when we ourselves wander in the dusk, perchance following some star.

A little of the Arcadia that these seek may be anywhere—in a city back-yard, a park or along a country lane. I myself found an epitome of Arcadia tucked in beside the railroad down in Connecticut not more than forty miles from

New York. Sound Beach is a neat little village, a mile from the picturesque shore of Long Island Sound, a street of shops that cater to the surrounding commuters' homes and the summer cottages alongshore.

GETTING INTO THE ATMOSPHERE.

You get off the train at a little station, tread a perilous path down a railroad embankment, enter a grove, and you are in ArcADIA, spelled with three capital "A's" by those who know it best. Here are nature and all the appliances of nature study, buildings, instruments, teachers, grouped in a shaded five-acre lot, and because it is ArcADIA it is free to all and because it is free to all it is Arcadia. There is a marshy meadow with a tiny pond where creatures of the marsh,—frogs, salamanders, yea snakes and water scorpions, may be found and studied along with marsh insects and plants. This is Nymphalia, the abode of nymphs, butterfly nymphs in the air, dragon-fly nymphs in the pools and wood nymphs in modern dry-goods

store garb when the classes gather. For hither come people old and young to revel in Arcadia for a time, to learn to love and know nature.

That these may find rest and refreshment, "Little Japan" is a part of ArcAdiA. This is a shaded, commodious, open-air rest platform with seats and opportunities for lunching parties, a building for shelter in time of storm and a chance for young people to dance to Edison phonograph music on the platform if their teachers allow between classes. Little Japan is beautified with Japanese decorations.

The abode of nymphs and the Japanese cozy corner are a fitting introduction to more serious or more adventurous opportunities. In all you may visit a dozen buildings, dedicated each to some phase of the work. There is the observatory, for instance, containing a six-inch Clark telescope. Through this real astronomical research may be conducted. Galileo had nothing so good. The classes from the schools which come to study the stars may get a peep through this, but most of their work is field work. Often you may find them grouped in the field at dusk, stretched out on the grass so that they may take in the uttermost limits of the sky at a glance, while the instructor stands in their midst pointing out the glories of the heavens in detail.

FUN AMONG THE BEES.

Of a sunny afternoon you may find them among the beehives. Perhaps a group of kindergarten children, standing with faces unprotected by netting and bare hands that hold frames swarming with bees, while the instructor teaches them to handle the winged stingers without harm to themselves or the bees. It is rather noteworthy and speaks well of the value of the instruction that boys and girls of tender years learn thus to handle the bees, not only without harm to either but seemingly with enjoyment. Astronomy is a serious enough pursuit, bee handling is not only sober nature study but exciting adventure as well.

Dr. Edward F. Bigelow is the head of ArcAdiA. The place is his home and his unique plan for interesting the world in a study of nature. He is at once prophet, instructor and guide. Schools, private and public, anywhere within fifty miles have come to lean

on him and a visit to his place is a first step toward interesting children in the serious study of nature which he believes to be the foundation of all real knowledge. One of the popular buildings at ArcAdiA is the Welcome Reception Room. Here is a cavernous stone fireplace which dispenses warmth and cheer. A long reading table, well furnished with instructive and entertaining nature books and projection apparatus capable of throwing on the screen not only the ordinary lantern slide pictures, but the secrets revealed by high power microscopes of which there are several in the laboratory, which is another building.

HEADQUARTERS OF NATURE STUDY.

In this building Dr. Bigelow not only does his research work, but gives first aid to injured amateur naturalists who have become wrecked on something, they don't know what. Personally conducted or by mail or express the specimens come and the doctor cheerfully investigates, names or admires and notes the rarity, as the case may seem to require. Often the details concerning these things are published in the little monthly magazine which itemizes the work of the place from month to month. This makes ArcAdiA the headquarters of information which reaches much farther than the personal touch can.

There is much more to ArcAdiA. I have touched on only a few of its salient points. As an institution it is unique and centers about a unique and kindly personality, a man who has been himself all his life an enthusiastic nature student and is possessed with the idea that all the world should follow along the same path. Very likely it should; at any rate yearly more and more pilgrims seeking Arcadia with staff and scrip stop off at Sound Beach to learn a little about the universe we live in and find contentment and ideal rustic simplicity blossoming in the midst of a hustling and rather materialistic world.

**Kind Words from the Sound Beach
Correspondent of The Greenwich
Press.**

ARCADI A and Dr. Bigelow, both well known and well loved by all Sound Beach, were splendidly spoken of in the Boston Transcript of January 7.

Among other things it says, "Schools, private and public, anywhere within fifty miles have come to lean on him and a visit to his place is a first step toward interesting children in the serious study of nature, which he believes to be the foundation of all real knowledge."

This should be a thought to be fostered in the hearts of the parents of our school children. Advantage should be taken of the splendid opportunities for nature study within our boundaries.

The Green-Gilled Oyster Appears.

The oyster-lovers of Washington, Philadelphia, and other coast cities have been enjoying during the past few weeks a delicacy of which few housewives have been entirely aware. This is the green-gilled oyster, widely famed in France as the delicately flavored Marennes oyster. There the bivalve is cultivated in special "claires" or small artificial tide-water ponds in which the oysters' gills become bright green in color. There is a great demand for such green-gills at Marennes and at many of the famous French watering places because of their fine flavor and unusual "fatness." And the price paid for green-gilled oysters is considerably higher than that paid for normal "white" oysters.

While the oyster farmer of Marennes goes to some trouble to obtain the green coloration of the gills, the American oyster farmers of certain parts of the Chesapeake Bay and North Carolina Sound regions have occasionally been granted by nature the privilege, generally much against their wills, of rearing green-gilled oysters when they would have been better satisfied with the ordinary American "white" oyster. The only objections the American oyster culturists have, however, to the emerald-edged bivalve are the facts that the American public does not know its qualities and that nature does not bring about conditions each year for its regular natural production.

The greening of the breathing apparatus of the oyster is caused by a vegetable pigment characteristic apparently of a single microscopic plant, a diatom. The rate of growth and reproduction of this particular diatom is governed by very delicate changes in the chemical constitution of the sea

water in which it lives. The oyster ingests a large number of diatoms of many different species in its normal feeding process, having no special choice of the kinds it eats. So when the particular diatom whose pigment causes the greening is very abundant it naturally feeds freely on that also.—New York Evening Post.

Greening of Oysters.

BY J. S. GUTSELL, BUREAU OF FISHERIES,
WASHINGTON, D. C.

This pigment, absorbed by the blood, is conveyed to the gills, where certain wandering secretory cells reabsorb it, take on a greenish tint and so color the gills.

It is supposed that these cells ultimately disintegrate with the production of mucus which is discharged on the surface of the gills. Doubtless, also, following the disintegration, the pigment finds its way out of the gills, which in this case would function in the discharge of a waste substance, in addition to serving, like the lungs of higher animals, for the interchange of respiratory gases.

Unarmed and Unafraid.

A Hymn of Peace.

BY DAVID STARR JORDAN, STANFORD UNIVERSITY,
CALIF.

O thou blest land, America!

I look adown thy country side,
And in the dawning glow of Peace,
I see thy landscape glorified.

Thy forests loftier rear their crests,
Thine eager rivers swifter flow,
While from thy hills of Hope and Faith,
Thy cleansing winds of Freedom blow.

The Future beckons—May it be!
The land where every dream comes true
The land in which each humblest child
Shall breathe as free as I or you.

The favored land of noble youth
The land where Hatred dies away
The land where each may know the truth,
The chosen land of Liberty.

Erect, unarmed and unafraid
Its children of the future stand
With Peace, her sheltering pinions spread
North, South, East, West, above our lands.

O speed the day when blood of man
No more incarnadines the sod,
When men in brotherhood shall stand
With every child a son of God.

When Peace with velvet-sandalled feet
Shall tread the land from shore to shore,
And peoples in the bond of love
Shall never learn war any more.

ORNITHOLOGY

An Original Design in Bird Nest Architecture.

BY EDWIN A. FIELD, SPRINGFIELD, MASS.

The average man or woman looks for little originality among the birds. Feathered life is commonly supposed to be a cut-and-dried affair, guided by instinct along a fated path that leaves little room for intelligence or originality. Even the most casual observer of birds, however, must be impressed by the fact that the accompanying illus-



REMARKABLY "ORIGINAL" NEST.

tration gives some rather striking evidence of talents akin to genius.

Here is a nest that was discovered this fall by Albert F. Sickma of Holyoke, Massachusetts, near the top of Mt. Tom, one of the famous members of the picturesque Holyoke range. While the nest is constructed along the customary lines in its final processes, its foundation is remarkable for its originality. We find it difficult to believe that this originality was without deliberate design.

As discovered by Mr. Sickma, the nest was securely lodged, about twelve

feet above the ground, in a four-pronged fork of a small tree, where it rested upon a soft mattress of intertwined strips of paper napkins and waxed paper, the long ends of which hung down a foot and a half below the nest and fluttered in the wind like white festoons. Some of this paper has been woven into the body of the nest itself along with other fantastic materials like paper lace from candy boxes and even soda water straws, the protruding ends of which may be plainly seen.

Whether used by the builders as decorations, as camouflage or as a means of frightening away their enemies, these paper trimmings are plainly the remains of numerous basket picnics. The summit of Mt. Tom, near which the nest was found, is a popular place for summer outings. The birds who invented this new type of nest, therefore, had plenty of material at hand with which to experiment.

The designers had apparently gone south for the winter when their handiwork was discovered and it was, of course, impossible to interview them as to their motives in building such an unusual home. Perhaps they had no motive other than to build a nest in which to rear their young. They may have used the paper foundation by chance because it happened to be handy. The manner in which this paper was utilized, however, is so unique as to make a strong appeal to the imagination. It seems to indicate that the feathered builders responsible for this ingenious piece of work really did have ideas of their own.

In order to preserve the nest in its entirety, Mr. Sickma was permitted to cut away the whole branch containing the festooned structure, and he has presented the curiosity to the Springfield Museum of Natural History. He said he believed the nest had belonged to an aristocratic wood thrush family.

Shrikes Attempt to Get Canaries.

BY PAUL B. MANN, HEAD OF BIOLOGY DEPARTMENT, EVANDER CHILDS HIGH SCHOOL, NEW YORK CITY.

While I was visiting in Brewster, Massachusetts, recently, one of my friends, Miss Edith Capen, reported to me within an hour of its occurrence a curious incident of biological interest.

About eight o'clock on the morning of November 25, 1921, her two canaries hanging in the sunshine, one in each of two south windows, suddenly became greatly agitated and alarmed. Her attention was attracted by the noise of their fluttering and as she ran to the windows she saw the cause of the alarm. Some larger birds, later identified as loggerhead shrikes, were doing their utmost to get through the protecting glass of the windows, evidently determined to obtain the canaries. The food of shrikes, as most people know, consists of insects, mice and small birds, and these bright colored pets must have seemed tempting indeed on a November morning, when most animal life had either migrated or begun to hibernate. In the case of these shrikes emotions were apparently stronger than their normal fear of man, for they alternately clung to the window sash and dashed away a few feet to get a fresh start. There were several shrikes flying about the windows, but two in particular were so furious when balked by the glass that they spread their tails out like great fans and were not frightened off even when the canaries were being removed from the windows. Reluctant to give up, they flew to a rosebush about four feet away from the house and perched there for some time directly in front of the windows.

The shrikes were apparently traveling in a flock, for at least eight were counted later in the garden where they had scattered among the bushes and trees.

In the article, "Bird Notes around Stamford, Conn.," by Mr. Paul G. Howes of that city in our January number, the word "gulls" should have read "terns." Mr. Howes states that no gulls breed here. The mistake was a slip of the pen and mind when he wrote the article.

The Song of the Woodcock.

New York City.

To the Editor:

Several of my friends have spoken of my reference to the song of the woodcock on page 214 of "A Surgeon's Philosophy" and commonly with some question if the woodcock really sings sweetly. On a Sunday evening in March, I was at Merribrooke, Stamford, Connecticut, and went out as usual to listen to the different kinds of music in the air at that time of day. If you know of some doubter on the woodcock song question take him up to my place now. Singing begins a few minutes on either side of 6:30 accordingly as the evening is cloudy or bright.

Take a stand in the road about fifty yards inside of my entrance gate and keep quiet. The bleating of three male birds will soon be heard as they call while resting on the ground, the bleat sounding much like the call note of a nighthawk. One after another of these woodcock will then mount to about one hundred yards in a spiral flight with a loud twittering of wings. The wing note then becomes broken and is succeeded by the sweet warble, in timbre like the voice of the bluebird, continued while the bird descends in a spiral volplane.

Farther in on my driveway to the right of the house you will see two tall elm trees. Take a stand under these trees and you can watch three more male woodcock going through their rivalries in singing. How much better it would be if men conducted their rivalries in this way instead of by fighting! If you care to hear still more woodcock singing you will hear them at the top of the hill just after crossing my bridge behind the barn, and another good place for listening to them is at the northeast end of my big lot along the river about half a mile from the house.

You will perhaps see a deer or a fox while standing quietly listening to the woodcock. One evening a raccoon came within a few yards of where I was standing.

ROBERT T. MORRIS.

Trees are rooted men and men are walking trees.—John Burroughs in "Under the Maples."

The Most Beautiful and Lovable Bird.

Queer, isn't it, how we like to separate beauty from utility? Theoretically the most useful thing should be the most beautiful, but practically it isn't. From the naturalist's point of view what is the most beautiful and at the

never has a pupil selected any of our common domesticated birds, with the exception possibly of the well-known caged pets, canary, finches, etc. Even a thought of such birds seems to be rather rare. Ask a school what is the most lovable bird, the most beautiful,



NOW ISN'T THAT A BEAUTIFUL BIRD?"

same time the most lovable bird? Opinions might vary even after the question had been gravely considered, but it has been interesting to me to ask the question in the various schools that I have visited, and to note that

and thought almost always turns to the wild bird, scarlet tanager, blue jay, robin, etc. But it takes only a moment's thought to realize that the most lovable of all birds is the little chicken. It is hugable, squeezable, lovable and

endears itself to us as does no other member of the bird world. Young chickens are so lovable that we put them in a class by themselves, and never compare them with other birds. But this mental twist, so applicable to school children, does not apply to the commercial poultry man. Visit any of the large shows and the expert will hold up admiringly a hen and say, "Isn't she a beautiful bird?" Seldom if ever will he refer to her or to the cocks and cockerels as anything but birds. "What will you take for your bird?" "What prize did your bird win?"

But considering the beauty of the domesticated bird, it is the writer's personal opinion that the most beautiful is the turkey, especially the male commonly known as the gobbler. In no other is there such grandeur, so iridescent a sheen of feathers, so noble a bearing of the head and a position of the body so royal. A strutting tom turkey, as country people would style it, is indeed the grandest thing in the bird world. There is something lost, especially in youth, if it has not been associated with this farmyard loveliness and beauty.

I am aware that I am here on debatable ground. Some one will say that the peacock is the more beautiful. You may know peacocks but you don't know turkeys. You have not lived with turkeys. You do not possess the hallowed associations of the past. Some of the most impressive beauty of the turkey you can see when you close your eyes, but you must keep them wide open for the peacock.

I think that Mr. A. H. Beardsley of the "Photo-Era Magazine" must have been a farmer boy; but however that may be, he is a good photographer and an accomplished judge of the fine points in a high-class photograph. I commend his judgment since he has put the accompanying cut of the turkey on the front cover of his magazine, "Photo-Era," and I have equal admiration for this unusual cut of the commonplace turkey by a remarkably skilled photographer with a rather commonplace name—Mr. John Smith. I liked it so well that I have borrowed it to give the reader pleasure.

But speaking of turkeys that reminds me. Of all the astonishing, I felt al-

most like saying incredible, stories of the turkey is that by the skilled biologist and master of the English language, Mr. Dallas Lore Sharp. In his book, "Winter," published by Houghton Mifflin Company, his story called "The Turkey Drive," for novelty, interest, clear-cut expression and knowledge of the bird, should take the first premium. It is as pleasing as the author's well-known classic, "Turtle Eggs to Agassiz." Two college boys in New Brunswick, to earn a little money to help in their college expenses, went among the farmers and bought some five hundred turkeys, and started to drive them several days' journey. They were not allowed to roost at night. They must keep a-going. They must not fly to the trees or they could never get started again in the morning. But on the third day came a snowstorm and the turkeys insisted upon roosting on a railroad track. I quote from the author:

"They were going to roost upon the track! The railroad bank shelved down to the woods on each side, and along its whitened peak lay the two black rails like ridge-poles along the length of a long roof. In the thick half-light of the whirling snow, the turkeys seemed suddenly to find themselves at home, and as close together as they could crowd, with their breasts all to the storm, they arranged themselves in two long lines upon the steel rails.

"And nothing could move them! As fast as one was tossed down the bank, up he came. Starting down the lines, the boys pushed and shoved to clear the track; but the lines re-formed behind them quickly, evenly, and almost without a sound. As well try to sweep back the waves of the sea! They worked together to collect a small band of the birds and drive them into the edge of the woods; but every time the band dwindled to a single turkey that dodged between their legs toward its place on the roost. The two boys could have kept two turkeys off the rails, but not five hundred."

Then follow excitable features. They might serve as a thriller movie. The fast express that the boys supposed the approaching train to be proved to be a freight. It was somewhat of a task to throw five hundred turkeys

from the track and to throw them back when the train had passed. Some of the birds, apparently mistaking the box cars for farmyard buildings in slow motion, boarded the train and were thus taken to town. We quote from the extended account of this episode.

"Instantly came a chorus of answering gobbles as every turkey along the track saw, in the failing light, that real buildings—farmyard buildings—were here to roost on! And into the air they went, helped all along the train by the two boys, who were tossing them into the cars, or upon the loads of lumber, as fast as they could pass from car to car.

"Luckily, the rails were sleety, and the mighty driving-wheels, spinning on the ice with their long load, which seemed to freeze continually to the track, made headway so slowly that the whole flock had come to roost upon the cars before the train was fairly moving."

In that story the high-water mark of turkey episodes has been reached. No one else will ever try to excel it.

Hens Immune From Strychnine.

In John Burroughs's last book, "Under the Maples," he makes on page 196 this astonishing statement: "You cannot poison a hen with strychnine." This was referred to Dr. A. K. Fisher, in charge of the Economic Investigations, Bureau of Biological Survey, Washington, D. C. He replies as follows:

"The statement by Mr. Burroughs in his book, 'Under the Maples,' regarding the effect of strychnine on domesticated fowls is correct. Chickens and the wild gallinaceous birds seem to be practically immune from the effects of strychnine. Just why they have this immunity is a point to be learned. Extensive field operations and operations carried on in the laboratory by the Canadian Government, the Biological Survey, and the Public Health Service show that a quail weighing not over five or six ounces will eat with impunity enough strychnine poisoned grain to kill squirrels weighing in the aggregate twenty pounds. In our extensive operations in the western States against injurious rodents, we have distributed over 5,000 tons (165 carloads) of poisoned grain. Although

the assistants carrying on this work are skilled in finding dead animals, up to the present time we have been unable to find one single game bird destroyed by our operations.

"It may be of interest to you to know that we have further safeguarded the birds by using barley and oats instead of wheat as a vehicle. At the present time this grain is rescreened so as to remove all weed seeds which, when poisoned, might be taken by shore larks, longspurs, and other small seed-eaters."

This is indeed an astonishing situation and it opens up interesting suggestions and great possibilities. Why not get rid of rats around poultry yards by using strychnine? Rodents are susceptible to strychnine, and as the hens are immune we shall escape the danger that most of us have feared if the hen by chance should eat the poisoned grain. We wonder if anybody has experimented along those lines. If so, we should be glad to receive reports.

As welcome as the sunshine

After spell o' rain,

So welcome is the springtime

After winter's reign.

—Emma Peirce.

Red Dead Nettle.

BY ROBERT SPARKS WALKER, CHATTANOOGA, TENN.
When cold December's winds begin to blow,
And when the earth is wrapped in ice and snow,
Along the road and out in open space,
There a red dead nettle shows its greenish face.

Its stem so square, six inches high, you see,
At once is marked for the mint family.
"Ah," it says, "I'm right glad for you to know,
The many shaped green leaves that I can grow:

At top, my leaves are flower-circled crowned;
In middle, heart-shaped ones are always found,
With greenish leaves long-stemmed and small
at base.

A living Chinese pagoda-looking vase!

Some early day when comes the bright New Year,

My flower buds like drops of blood appear,
And if the cold should freeze me tight,
I grow and blossom on with all my might.

My bell-shaped flower's tiny upper lip
Has beard, the lower spotted near the tip;
My flow'r magenta grows in winter's breeze,
A landing place it has for little bees.

I float my flowers until the month of June,
And then my lovers say I quit too soon:
Now you may think it quite a funny thing,
That I'm called 'dead' because I do not sting."

TO KNOW THE STARRY HEAVENS

The Heavens in March.

By Professor Samuel G. Barton of the University of Pennsylvania.

MARCH is the first of the spring months. The Milky Way, carrying with it and ahead of it the brilliant winter constellations, now approaches the western horizon in the early evening to remain in an inconspicuous position near the horizon for several months. The Pleiades and

southwestern quarter of the sky. There are twice as many bright stars in this quarter as in the remainder of the sky. It may be noted that there is a long strip of the sky extending from south to north just east of the Milky Way in which very few stars are seen.

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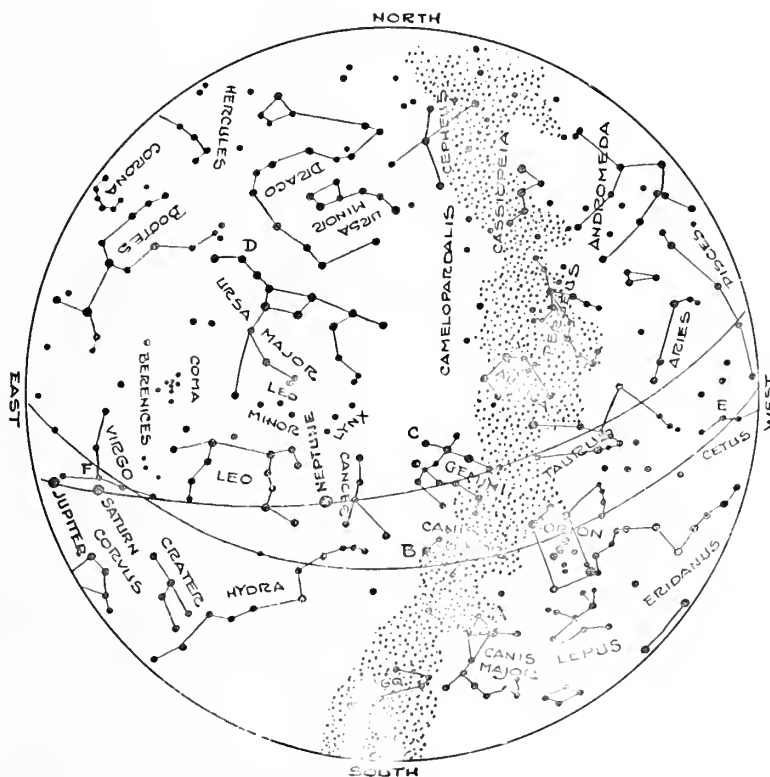


Figure 1. The constellations at 9 P. M., March 1. Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.

Hyades are low in the west. Their disappearance in the sun's rays marks the beginning of spring, and their appearance in the early evening in the east indicates the autumn season. Most of the bright stars are concentrated in the

Double Stars.

The three very bright stars—Sirius at A, Procyon at B and Castor at C—are interesting double stars. The first to be discovered was Castor, about 1750. This was among the earliest dis-

coveries of double stars. The first was Mizar, at D in Ursa Major, discovered in 1650; the second was Gamma Arietis, at E, in 1665, and the third was Alpha Centauri, in 1680. Alpha Centauri is a star which is not visible here. It is the star nearest to the sun, so far as we know. It is the finest of double stars with respect to the brightness of the stars, as one is of the first and the other of the second magnitude. One star moves about the other in a revolution of eighty-one years. It has been observed to make nearly three complete revolutions since its discovery. About 1750 Bradley noted that Castor was double, also Gamma Virginis, at F, 61 Cygni and Beta Cygni. The stars in Cygnus are not now visible. Any of these stars can be seen double with small telescopes.

Castor is the finest double star to be seen here, if only the brightness of the components is considered. The stars are of second and third magnitudes. It was the first double star in which one star was found to be moving about the other. This was noticed in 1803. However, in spite of the long period during which it has been observed, we know little about the period required for a complete revolution except that it is between two hundred and one thousand years.

Although both Sirius and Procyon are very bright stars and carefully observed by many observers, they were not seen to be double stars until recent years. In 1834 variations in the motion of Sirius were detected, and in 1840 a similar variation was noticed in Procyon. These variations were asserted to be due to the presence of unseen companions. A discussion of the variation enabled astronomers to predict the position in which the companions must be seen, the path, mass and period of the stars. The companion to Sirius was found in 1862 with a new telescope larger than those existing before. It has now made a little more than one revolution. The companion of Procyon was not found until 1896, with the great telescope of the Lick Observatory. It is extremely difficult to see. This companion revolves in about forty years. It is a remarkable fact that the bright component of Sirius is twice as massive as the fainter but gives out more than five thousand times as much

light. The mass of the companion of Procyon is about one-fourth of that of the sun, which means that it is among the stars of the smallest mass known. Both Sirius and Procyon are among the stars nearest to you. Sirius is forty-eight times as bright as the sun and Procyon ten times as bright.

* * * * *

The Planets.

The positions of the bright planets Jupiter and Saturn are now such that they can be shown on our map. The planets are not far apart in the constellation Virgo. The satellites of Jupiter and the rings of Saturn make them the most interesting planets. Saturn becomes an evening star March 25. After that time it will be less than 180 degrees east of the sun. Observers should recall that this is the time when the zodiacal light is seen best. This is a column of faint light extending upward along the ecliptic toward the Pleiades from the western horizon. It must be observed on a clear, dark night just after twilight.

* * * * *

Eclipse of the Sun.

An annular eclipse of the sun occurs on March 28. The path in which the eclipse is seen as an annular eclipse crosses South America and Africa. The eclipse can be seen as a partial eclipse over these continents and also over Europe. A very minute portion of the eclipse can be seen under poor conditions from Florida. Elsewhere in the United States no part of the eclipse will be seen. The eclipse has little scientific value.

This is the time of the year when we might expect an eclipse of the moon,

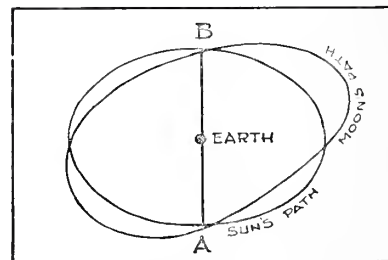


Figure 2. Showing why there is no eclipse of the moon this month.

but none occurs. The sun appears to move over the sky in a path which we call the ecliptic. The ecliptic is marked

on Figure 1. The moon appears to move over the sky in a circular path which lies near the ecliptic and which crosses it in two points. These paths are shown in Figure 2. They cross at A and B. Since the moon moves around the earth in a month it passes the point A once a month. The sun appears to move around its path once a year so that it passes the point A only once a year. Hence there are but two times in the year that the earth, sun, and moon are nearly in line—that is, when the sun and moon are both near A or B. The eclipse of the sun on March 28 occurs by reason of the fact that the sun is near the direction of the point A and the moon in passing the point A comes between us and the sun. When the sun is in the direction of A the earth's shadow lies in the direction of the opposite point B. The moon passed this place two weeks earlier, March 14, and passes it again April 10. On March 14 the moon passes the shadow a little bit too far to the right of B to have an eclipse as the moon is a little above the shadow. By April 10, when the moon again passes B, the earth's shadow is to the left of B so far that the moon when it passes it lies below the shadow and no eclipse occurs. Thus the moon escapes eclipse at B and there is no chance of an eclipse until the sun reaches B and the shadow is near A in six months later.

The sun crosses the equator, marking the beginning of spring, March 21, 4:59 A. M. Eastern Standard time.

Morning From My Balcony.

Resplendent in the East,
The morning red of sky;
Above the tulip trees,
The crescent moon on high.

Late lingering in the West,
One faintly gleaming star,
Belated wanderer,
Of myriad worlds afar:

And rhythmic in the air,
In softly whispering breeze,
The little new-born leaves,
A-flutter on the trees.

This temple of the morn
Hath choir all of birds,
Their ecstasy of joy,
To deep for uttered words.

—Emma Peirce.

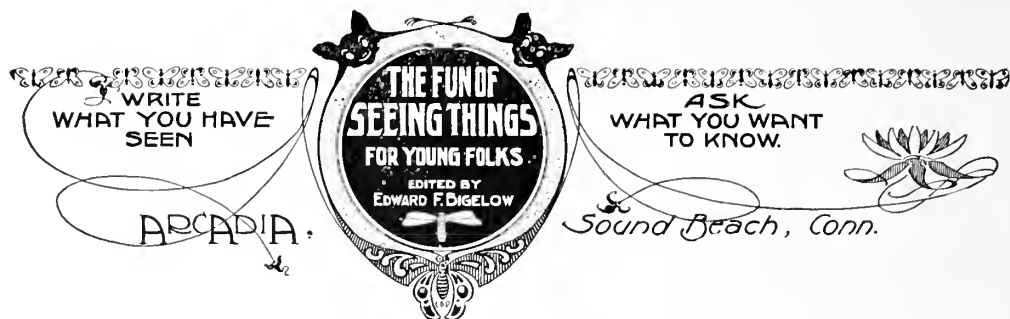
Discontinuance of "The Conservationist."

"The Conservationist," published at Albany, New York, by the New York State Conservation Commission, announces in its number for December, 1921, recently received, that the publication is to be discontinued. It is evident from the announcement that there is an unconscious compliment paid to all other organizations that save the expense of conservation laws and their enforcement by arousing a genuine interest in the wild things of nature. The longest lived, the most effective and most comprehensive of all organizations in the interests of wild nature is The Agassiz Association that points with pride to its forty-six years of effective work.

"The Conservationist" in its dying swan song pays an unconscious tribute to us in our work and of course to the efforts of others of a similar nature. It says:

"Theoretically speaking, were the people really educated in conservation, if they knew conditions as they are, if they were familiar with actual facts concerning our wild life, our forests or our waters, there would be no need for a Conservation Law. But such a situation is of course millennial; and in the meantime we can merely do our best in conservation education, the kind of education that reaches children in the schools, teachers, guides, sportsmen and the public in general. Once a genuine interest in the wild things of Nature is aroused, the battle is half won. This can be accomplished through magazines, newspapers, lectures, motion pictures, lantern slides and field trips."

Pennsylvania, under the direction of Gifford Pinchot, the new commissioner of forestry, leads all states in forest activities. The biennial appropriation passed by the legislature and approved by the governor carried \$1,870,000, an increase of \$863,300 over the appropriation of 1919; \$1,000,000 of the total is for fire protection. The legislature also passed an act empowering the federal government to acquire lands on the watersheds of navigable streams within the state, by purchase or condemnation, and to control and regulate such reserves.—Science.

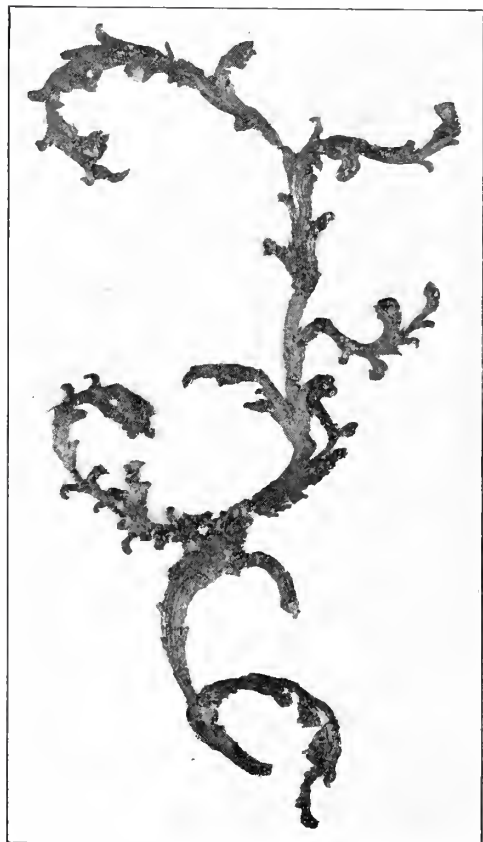


What Graceful Plant is This?

BY HERBERT W. FAULKNER, WASHINGTON, CONNECTICUT.

Many of us have seen the flowerlike snow crystals, but who has ever found a specimen of this strange and beautiful plant discovered in the wintertime?

My nephew brought it in to me from a winter's walk along the railway, and



GUESS WHAT PLANT THIS IS?

I at first mistook it for seaweed dried under pressure, and was much surprised to discover that the beautiful and delicate spray is made of steel.

My nephew found many of these

"plants" on the snow close beside the rails, where the wheels of heavy locomotives had shaved off thin scales of steel which had curved and twisted into exquisite forms strangely imitating mosses or seaweeds with all their beauty and charm. Of course these steel shavings are frequently forming unobserved and soon dissolve in rust, but in winter they are easily seen upon the white snow.

The chalice of the early spring,
Is full to running o'er;
Of color, beauty, fragrance, song,
It holds a precious store:
And when 'tis lifted to our lips,
All parched with winter's dearth,
We take deep draughts of pure delight,
And bless our Mother Earth.
—Emma Peirce.

I find that one has only to overcome a little of his obtuseness and indifference and look a little more closely upon the play of wild life about him to realize how much interesting natural history is being enacted every day before his very eyes—in his own garden and dooryard and apple-orchard and vineyard. If one's mind were only alert and sensitive enough to take it all in! Whether one rides or walks or sits under the trees, or loiters about the fields or woods, the play of wild life is going on about him, and, if he happens to be blessed with the seeing eye and the hearing ear, is available for his instruction and entertainment. On every farm in the land a volume of live natural history goes to waste every year because there is no historian to note the happenings.—John Burroughs in "Under the Maples."

When one of our poets writes, "wild carrot blooms nod around his quiet bed," he makes better use of this weed than the farmers can.—John Burroughs in "Under the Maples."

A Friendly Snake.

BY ALFRED O. PHILIPP, CHICAGO, ILLINOIS.

All snakes are not poisonous. In fact the great majority of our North American forms are not only nonvenomous but are actually beneficial to the farmer inasmuch as they annually destroy innumerable agricultural pests.

The specimen in this picture is a



THE FUN OF REALLY SEEING AN INTERESTING PET.

large indigo snake (*Spilotes corais*), commonly called the "blue bull." A little girl is holding him to be photographed with as little fear as she would have in handling a kitten. This snake is but one of my many pets, and although he has his own nest in an old suit case he roams about my house at will. He is friendly and apparently enjoys being picked up and fondled, but he frequently shows an aversion towards certain persons and quickly squirms away from them. In all my years of experience with reptiles I have never known one of these snakes to attempt to bite a human being. To see a full-grown adult rush frantically on a small harmless snake and crush him into pulp with a club is not only a

ridiculous spectacle but a decidedly cowardly act.

Rattlesnakes, cottonmouth moccasins, copperheads and coral snakes are absolutely the only venomous snakes you will ever find in the United States. There is seldom an intelligent excuse for killing any of the harmless species. Live and let live. Even the deadly rattlesnake strikes only upon provocation and merely asks to be left in peace.

Walking With Eyes and Ears.

We all walk with our feet, and some of us walk with our eyes and ears. Mere walking with the feet is a splendid exhilaration. "Give me health and a day and I will make the pomp of emperors ridiculous." Ten long miles over hill and valley, with the wild brush of an autumn wind, make the cheeks and the spirit glow until the whole of life seem an ample region of contentment.

But the exhilaration of walking with eyes and ears is far beyond the pleasure of walking with the muscles alone. What a rich and pregnant sentence is that of Théophile Gautier: "I am a man for whom the visible world exists." How fully it suggests a man whose eyes and thoughts are open to the quick succession of images and impressions, who find endless pleasure in the shifting spectacle of animate and inanimate nature, and who can never be bored or wearied so long as he can forget himself in the quivering intensity of diversion with which the visible world provides him.

Take the walk in city streets. Some persons pass hastily, as if their eyes were shut and their souls fastened to a tormenting or enchanting vision within. Some unthread most curious matter from the Babel of sounds. Others are enraptured with the bright, contrasted stream of color that flows round them. Others are alive every moment to the faces—faces quite unknown, yet revealing brief, fascinating visions of laughter or despair, of love or hate, of stupidity or cruelty or unachieved aspiration or illuminating hope.

And the walk in the fields! It is merry and restful to tired nerves. But how full of revelation and wonder it is to those who have learned to walk

with their eyes and ears. Walk with a painter, and he will teach you secrets of light and shadow that will transfigure your spirit with a mysterious and far-reaching beauty such as you never imagined before. Walk with a naturalist, and flowers and birds, which were mere blotches of color and snatches of song, will assume a significance, a charm, a life that will make you seem to have walked right into an undiscovered country.

Walk with your feet by all means, even if you have to neglect your automobile to do it. But at the same time open your eyes and ears, direct them, use them, and they will lead you into new worlds of inexhaustible delight.—The Youth's Companion.

A Natural Shark Trap.

BY DAVID STARR JORDAN, STANFORD UNIVERSITY, CALIFORNIA.

In Southeastern Alaska is a curious natural shark trap, ultimately to be fitted with the teeth of these creatures, and which may help to explain certain deposits found in California and elsewhere in rocks of Miocene Age.

The north end of Wrangel Island is indented by a peculiar little flask-shaped bay flooded deep at high tide but otherwise a mass of soft white mud, for it receives the glacial detritus (very fine clay) brought down by the large and swift Stikin River. Not far away stands a cannery from which tons of salmon heads and entrails are thrown into the sea. This offal attracts large numbers of the great sleeper shark, *Somniosus microcephalus*, a twenty-foot long, sluggish, greedy fish which gorges itself to repletion and then retreats at high water to rest in the adjacent bay. Ebb tide leaves it helpless in the mud; and during the course of a summer great numbers of sleepers and other sharks are thus destroyed. In the end, of course, the flesh decays, but teeth and occasional fin spines are preserved as fossils, so that when—centuries hence—the bay fills up and dries out, it should form a very interesting ground for collectors.

In Kern County, California, a similar fine clay sediment scattered along the plains at the foot of the once glaciated Sierra carries enormous numbers of sharks' teeth, especially of an extinct mackerel shark, *Isurus hastalis*, which

must have been fifty feet long. With these appear occasionally the teeth of a still greater white shark, *Carcharodon megalodon*, much more than a hundred feet long—a veritable "man-eater," although in those days there were no men for it to eat. Multitudes of teeth of smaller sharks and of sting rays also occur in these deposits which, I am inclined to think, were probably laid down under conditions similar to those now observable at Wrangel.

Starting Fern Spores.

Fern spores, as everybody knows, are produced in great abundance, and yet new fern plants are not usually numerous. There are many vicissitudes in the life of a sporeling and few come to maturity. The spores are so exceedingly minute and the conditions for growth are necessarily so exacting that young plants are easily discouraged.

Those who grow ferns from spores find that great care must be taken in preparing the soil. Usually it is sterilized by baking and even then other low forms of life may overrun the young plants before they fairly get started in the world. Often the spores are sown on a block of peat which is kept moist and sheltered from the sun and wind. Noticing how frequently sporelings are found on the outside of the flowerpots in the greenhouse, some growers stop up the hole in the bottom of a pot, fill the pot with water and sow the spores on the outside. The water seeps through just fast enough to give the proper amount of moisture.

An improvement on this method is to hollow out one side of a soft brick and fill the hollow with sterile soil upon which the spores are sown. The brick is then placed in a saucer of water and "kept close," as the grower phrases it. This method of growing plants may also be followed in the case of minute seeds which are difficult to start in ordinary seed pans or flats.—"The American Botanist."

There are now in Florida eleven bird sanctuaries established by the Federal government, mostly islands. In addition there are many others, private and municipal. The Federal sanctuaries in the entire United States now number seventy-three.



Allen Samuel Williams.

BY GAYNE T. K. NORTON, NEW YORK CITY.

Nature lovers will be sorry to learn of the death of Allen Samuel Williams, director of the Reptile Study Society of America, author, lecturer and one of the best known authorities on reptiles. Founder of the Camp Directors' Association, and frequent lecturer and visitor at boys' camps, American boyhood has suffered a severe loss in the passing of this well-known and deeply loved naturalist.

For many years Mr. Williams has made his home in New York City. He was one of the founders of the old Williamsburg Athletic Club. For years he was one of the managers of the Sportsmen's Show in Madison Square Garden. In company with his wife, he has explored South American jungles and taken many valuable reptile specimens. His last illness developed following a lecture at a Boy Scout camp. He succumbed on February 5, in the sixty-fourth year of his life. He is survived by a wife and a sister.

Son of the Reverend Samuel Williams, Allen Williams was born and educated in Akron, Ohio. For a number of years he was a reporter on "The New York Times," and later he was associate editor of "Truth" and editor of "The St. Louis Chronicle."

Thirty years ago he wrote "The Demon of the Orient," a book that caused a profound sensation, describing the opium habit. This book caused an agitation that resulted in the passage of stringent laws in regard to the use of opium. Prior to writing the book Mr. Williams spent many months in Chinese quarters in several cities where he investigated the opium habit thoroughly.

For the last twenty years Mr. Williams has devoted most of his time to lecturing on natural history subjects

and the American Indian. Last summer he lectured to more than 30,000 boys. He has given much time to developing the Reptile Study Society of America, an activity very close to his heart, which under his competent direction grew to a membership of nearly six hundred. At the time of his death he was perfecting a national organization and putting the weight of the society behind protective legislation.

The Reverend Franklin D. Elmer, of Colgate College, read a beautiful funeral service that was a loving tribute to Mr. Williams. Raymond L. Ditmars, Curator of Reptiles, New York Zoological Society, and T. Gilbert Pearson, President Audubon Societies, spoke as comrades and friends before Dr. Elmer delivered the committal service.

Reading the Eternities Instead of the Times.

Henry David Thoreau speaking of the greater value obtainable in reading nature than in reading the frivolities, crimes and petty doings of mankind thus laconically expressed his thought: "Read not the Times but the eternities."

A similar remark was recently made to me by a prominent New York business man who appreciates our educational work. He said, "Do you know it really pains me, as I go down on the subway, to see everybody reading a newspaper, and I think what, after all, does it amount to. How much more of real good material could be obtained from THE GUIDE TO NATURE."

Personally the editor of this magazine is inclined to accept that as over-praise, and I think further that Thoreau's advice was not well considered. We have never advised any one to be a recluse and to avoid contact with mankind. We believe in living

fully up to every current interest in the actions of people. The value of nature study, as we view it, is its general effect upon the observers. It is a good thing not only to observe the rounds of the months and the seasons, but also to observe the progress of human affairs as expressed in the reputable daily papers.

To say that nature study should be the object of life, and that we should not take an interest in the doings of mankind, frequently reaches us from one who is overenthusiastic. We advise reading a well made selection from good literature, including the best newspapers. Mere novel reading or mere newspaper reading or mere nature study reading is not the only privilege possessed by an intelligent person. As we often say in science, "It is well to be a specialist, but bad to be nothing but a specialist." One should know one's own pursuits, but there should be a sympathetic interest and an inquiring spirit in all the actions of humanity.

One touch, or several touches of nature should make the whole world kin. That nature study which withdraws the naturalist from sympathetic interest with his fellow beings has to that extent gone amiss.

Power in Common Things.

BY THEODORE H. COOPER, BATAVIA, N. Y.

A significant example showing the latent force in common things came to my notice a short time ago. A young friend of mine, Donald Mayled, is interested in electrochemistry and seems superior to the average boy of his age in that he has developed an interest in something worth while. It is truly refreshing to find a boy like this among so many others who are frivolous and empty minded.

Some time ago we had occasion to recharge carbon cells and as there was no sal ammoniac at hand we tried common salt. Both of these compounds are chlorides and one seems to work as well as the other for experimental purposes, and as the one is so much cheaper than the other it is an advantage to know this.

Even a slight knowledge of chemistry is often found to be valuable in practical affairs. Aside from this, however, there is the intellectual satisfaction of knowing the meaning of certain

things. This has always been more to me than the application of knowledge to practical ends.

The main purpose of this article is to impress upon the reader the fact that there are unknown sources of power in common everyday things. That "fact is stranger than fiction" is demonstrated when we find that salt can be turned to light.

So many remarkable deeds are being accomplished in these days that the significance is likely to be underestimated, but think what a remarkable fact it is that an electric current can be set up by a simple chemical reaction. The number of new facts that may be discovered by making simple experiments in electricity and chemistry is by no means exhausted. It is really the simple experiments which, when intelligently made, may reveal secrets, and the beginner's mind is not fogged with heavy technical matters and so is susceptible to anything new which may result from an experiment.

An Overgreedy Bullfrog.

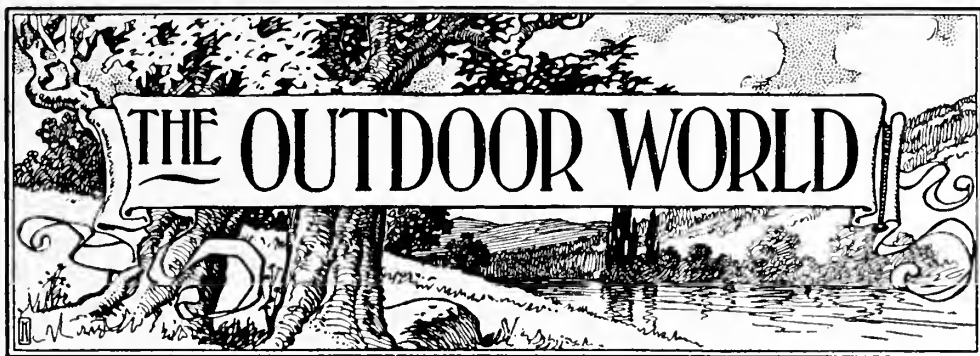
Dr. Robert T. Morris of New York City reports the following observation by his friend, Mr. H. A. C., of Rumson, New Jersey:

Mr. C. has a lake on his estate and one day observed that an old bullfrog that inhabited a certain patch of lily pads was missing. On further search he found the bullfrog dead and the feet of a young robin protruding from its mouth. When he pulled this robin out the bullfrog still seemed to be portly and he removed from its stomach another young robin partly digested. We know that bullfrogs get out into the fields at night and occasionally catch mice or young snakes or small birds, but two young robins at a single meal seemed to have led this particular bullfrog to the fate of a Roman Emperor.

Spring is On the Way.

Spring is on the way;
However dark the day,
With rain and sleet and snow,
And winds that fiercely blow;
With canopy of cloud,
The winter's stormy shroud,
And nights severely dark,
Without a starry spark;
With nature brown and sear,
And everything so drear:—
We yet have faith to say
That spring is on the way.

—Emma Peirce.



Painstaking Care in Camp Better Than Parental Oversight for a Daughter.

The words seem to jar. They do on me, I know; perhaps they do on you. We parents think that we are all in all to our offspring. But it needs only a second thought to suggest that along many lines others are more influential than we are. We recognize the fact when we employ a doctor or a music teacher or any other instructor. But when we consider personal care we like to think that we are the most important persons in the world.

This feeling is one of the greatest factors with parents, especially with mothers, when a vacation in a camp is suggested for their daughter. Camping and camps are new things. The proposition is so novel that the mother is doubtful, although she may feel that she should send her daughter. Many mothers have said to me: "I feel that my daughter is not yet old enough to be away from my personal care. Nobody could give her the care that I can give." That is a mistake. You can care for your daughter when her life is uneventful and as usual, but when something new and important appears then we need a special set of workers trained to manage that particular influence. Not a father nor a mother would think that they are able to remove adenoids or to vaccinate but when it is a question of general physical training and development then considerable thinking is necessary before we can arrive at a correct decision. It is for such parents that this article is intended.

Last summer when I was in a camp to which I had taken a dozen girls, the mother of one of the girls came to visit us. She said, "Daddy Bigelow, I have

something to tell you that will tickle your ears." (I quote her exact words.) "You are the first person to take my daughter away from me. When the train rolled out of the Grand Central Station I gave pretty liberal indications of my sorrow to the parents of the girls that went with you. Mr. ——" (the father of one going on a second year's trip) said, 'Stop your crying. Daddy Bigelow will take better care of your daughter than you can.'"

I recognized the fact that he was using the personal term only figuratively. He meant that I was taking that daughter to an institution where the combined efforts of several skilled workers would accomplish far better results than the care that could be given by parents at home. He knew that in case of sickness trained nurses and able assistants would give far better care; he knew that the physical training in swimming, diving, setting up drill, the personal supervision of games by experts, the horseback riding in charge of a skilled man with a hundred other things would each be superior to anything the parent could do. He knew that the table fare would every day be as good as that in the home or in the best hotel in New York. In some respects it would be better because the location is in farming territory where really fresh vegetables, milk and eggs are available and the menu is especially adapted to growing girls.

But aside from these details of fare and care the father probably had in mind the pleasing camp environment with hale, hearty girls as companions, and the clear atmosphere of Maine, proverbially the vacation ground of the country. Are not these conditions more agreeable to think about than the mul-

titudinous gases in the city air around even her beautiful suburban home?

Take better care of your daughter than you can? Certainly, and better too than the school can; that is, better if we consider the girl's healthful enjoyment. The moral is evident. Mothers and fathers who really love their daughters and wish to place them in the best possible care will bear the great sacrifice of sending them away or, rather I should say, permit them to go to this great playground where the conditions and the environment are one hundred per cent perfect. Do not accompany your daughter to camp. Avoid doing that if possible. She needs to be self-reliant, to act untrammelled by the usual parental oversight. She wants the joy of telling you of the camp when about two weeks later you arrive for that visit. She wants to become familiar with the other girls and with the attractions of the camp, the things to which she can point with pride. She longs for one moment in her life in which she may tell you something you do not know and in which she may feel that she can give you points on many phases of camp life that you have never dreamed of. She wants to feel superior, as she really is when her outdoor activities are noted. When she has become versed in camp lore she will chuckle quietly as you ask your innocent questions. Deep in her affectionate heart she says: "I never.. Did any one ever see a mother as green as that? She is even ignorant of the first thing about Cross Paddles and Water Witches, what we do on our tramps and mountain climbing and on the farms."

It will be a joy to her to give you kindergarten instruction and details of many things that any young girl is supposed to know. You, a grown-up person, sit meekly with your little daughter and fondly receive her instructions, which she will give in a dignified, "don't-you-know" manner. "Every girl in camp knows that." Yes, conditions are reversed. Your daughter then can take good care of her parents, and her parents would not exchange her for any other instructor. She will even give you "fine points" on the singing of camp songs, and will lament the fact that your musical training has been so long neglected, and you will sit there

in Pow-wow and say, "Well! I never supposed my daughter could sing like that."

If you desire to learn more in detail of this care that is better than yours, telephone or write for personal call, Edward F. Bigelow, ARCADIA: Sound Beach, Connecticut.

**Mrs. A. B. Hull, Top o' Kent, Colonia,
New Jersey.**

I do want you to know what a pleasure it has been to us all to look back on Betty's lovely summer spent at Kineowatha. We especially thank you for the special care you gave her on the trip there and the interest in things that you imparted to her. She speaks so often of the barn trips, such unusual fun she had there, she loves to live it all over. We hope she can return for another season.

Illustrated Lectures on Nature.

It is with much pleasure that we call attention to the illustrated lectures by Manley Bacon Townsend, 188 County Street, Attleboro, Massachusetts. The editor of this magazine is personally acquainted with the lecturer and knows that he has the spirit of the real naturalist with an effective power of diction and elocution that enables him to interest and instruct an audience. He has secured a large amount of good material and has prepared some of the most effective lantern slides in the possession of any other lecturer in this country. We cordially recommend him to churches, societies and other similar institutions.

**Mounted Animals for the Bruce
Museum.**

We are hoping that we have among our Members and friends a naturalist with a private collection of common mammals or of birds, that he will contribute to the Bruce Museum. We are especially in need of a raccoon, an opossum and some other of our smaller mammals. Will any one who has a collection in good condition and adapted to modern museum standards, please correspond? Edward F. Bigelow, Curator of the Bruce Museum, Post Office address, Sound Beach, Connecticut.



What Our Visiting Parties Do.

ARCADIA, the Home of The Agassiz Association, has been as definitely planned and equipped to carry on the work of that Organization as is a factory to produce a certain class of goods. The purposes of The Agassiz Association as set forth in the Charter of Incorporation may be summed up as "the general diffusion of knowledge" of nature. That work is carried on not only in the spirit of education but also of recreation permeated by a spiritual and a poetical point of view. We welcome all creeds or no creed. All phases and all ages of humanity we meet on the common ground of loving appreciation of Mother Nature.

The program of the day is as follows:

Parties arrive at 11:00 A. M. (or a little after that if they come by train from New York).

1. The address of welcome at Hickory Home on the Pavilion of Little Japan.

2. Disposal of wraps, packages, lunch boxes, etc.

3. Committees set the tables on the Pavilion, make coffee, cook bacon and eggs, etc., on the grills. Members of the party not thus occupied spend their time in social conversation, examination of the books in the Rest Cottage, playing the piano, singing, etc.

4. Lunch is served on the Pavilion. This usually occupies about an hour completed by the restoring of tables, dishes, etc., to their perfect order ready for inspection about 1:00 P. M.

5. A walk through Nymphalia with explanations and inspirations pertaining to wild nature. This is really a communion with nature in her most primitive form as it would be difficult to find in all the state a wilder tract of swamp land.

6. Demonstrations with the honeybees in our Educational Apiary.

7. Visiting the Astronomical Observ-

atory and learning the fundamental principles of popular astronomy.

8. Visiting the Office, Laboratory and the formal garden, where are pointed out, in sharp contrast to the wild of Nymphalia, the beauties of formality in ideally balanced landscape architecture on small premises. This is to show the possibilities of really good arrangement in a small yard.

9. Chair of Natural History—a five minute talk in the Welcome Reception Room.

10. Phonographic Optical Projection of Welcome.

11. A lantern slide talk on the purpose of ARCADIA and of The Agassiz Association concluding with projection microscope exhibition not equalled anywhere else.

12. Brief visit to Little Japan for social greetings and talking over the affairs of the day.

Parties arriving at 4:00 P. M. usually remain until 10:00 or 10:30 P. M., having practically the same program with the exception that the honeybee demonstrations come immediately after the introductory talk.

Rules of ArcAdiA.

1. Parties must keep together while on the grounds. They are permitted to divide only in going down to the stores at the end of Arcadia Road. This point is absolutely insisted upon. At no time are visitors permitted on the grounds of ARCADIA without a guide from the Office, and parties may be divided only when each section has obtained such a guide. This is seldom if ever necessary.

2. Nothing is to be picked in ARCADIA—not even a leaf.

3. Parties conducted around the premises must go single file because walks are narrow and there must be no stepping out of the path. We keep wild nature clear up to the walks and everything must be untrampled with the exception of the ground of the apiary



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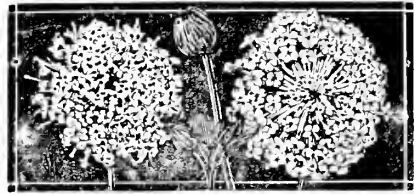
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where it is impossible for those who participate in the demonstrations to keep on the walks.

4. Reading newspapers is not permitted except by those who remain overnight. Our facilities, contributed by our Members and friends, must be used to best possible advantage. For those who desire to read there are about a thousand nature books on the premises. A book on almost any phase of nature will be supplied on request.

5. Dishes and other conveniences must be left in the same good condition in which they are found, ready for further use.

Cheer up! Spring begins in two weeks. Remember the philosophy of the old observer who remarked that he never knew it to fail, that if he lived through the month of March he always lived through the rest of the year.—"Greenwich News and Graphic," March 4.



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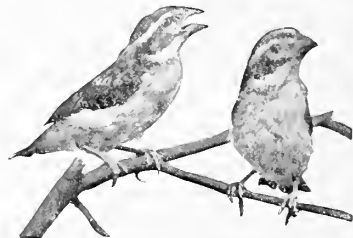
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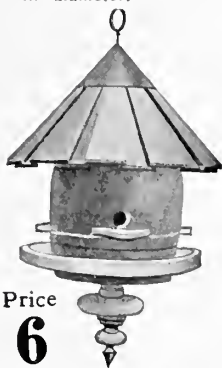
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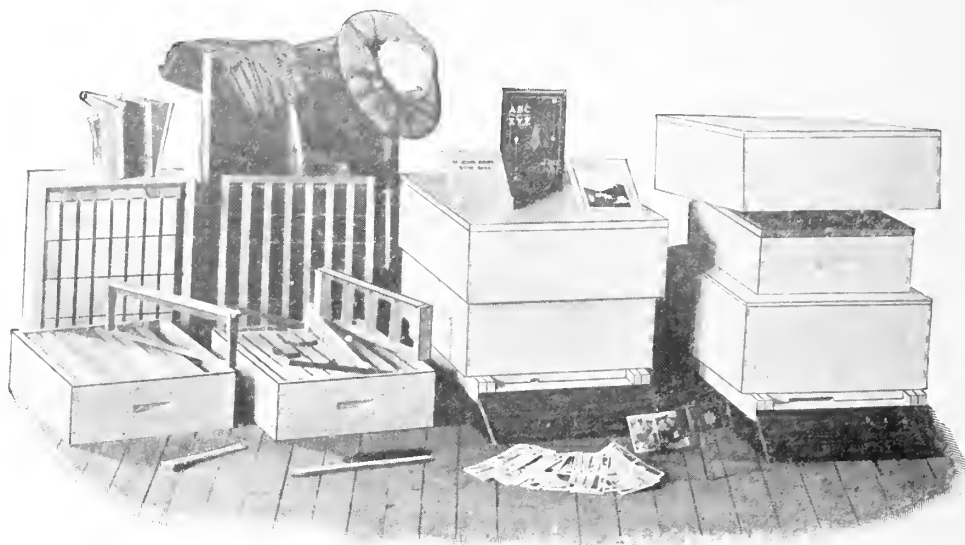
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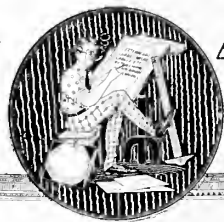
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In your visits of the last three years to Briarcliff I feel that you have done much through your excursions with the girls, your walks and your lectures with the lantern slides to develop in them a love of nature and the wonders of outdoor life, but your lecture last week with the microscope projections quite transcended anything which you have done for us heretofore. In fact it seems to me one of the most important scientific achievements that has come under my notice.

If you can reveal the secrets of the microscope to large audiences of young people as you did for us you will certainly be making a great contribution to scientific teaching. I wish you all success in developing your work along this line!

Yours very sincerely,
(Signed) EDITH COOPER HARTMAN.

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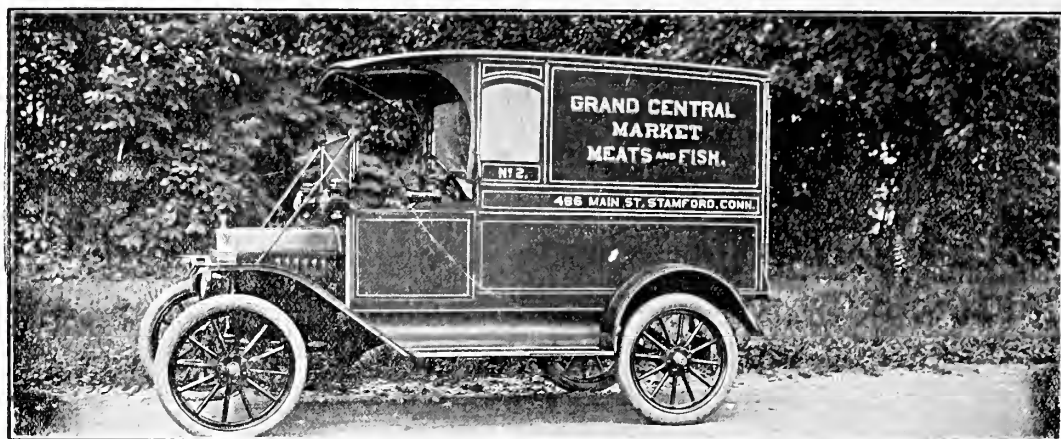
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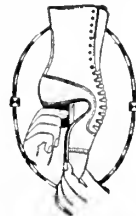
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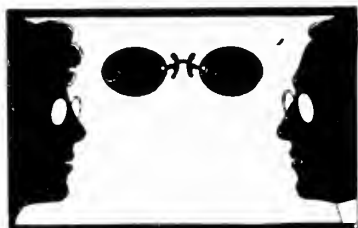
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Second, all the performances which make up the exhibition may be traced directly to the desire and earnest efforts of the insects to escape. The means employed to give an appearance of intelligent action to these struggles are sufficiently ingenious.

In the first place, each flea is attached to some object in such a manner that it cannot free itself, while the movements of its legs and feet are not hindered or embarrassed.

This was explained by the proprietor. The surface of the insect is so polished that no cement will adhere to it when dry, and should a soft or waxy substance be used the insect dies very soon. (A probable cause of this might be the obstruction of the stigmata.) He stated that by tying a single silk fibre around the flea and knotting it on the dorsal side, a bristle, fine wire, or what not, may be cemented to the knot. I was not able to observe exactly where the fibre encircled the insect. This part of the process is the most delicate and difficult to perform.

The proprietor states that female fleas are solely employed by him, since the males are "excessively mulish and altogether disinclined to work." The fact that they are much smaller and weaker than the other sex is probably another and more important reason, and they are said to die in a few days when closely confined.

The first preparation for their task is stated to be as follows: the wild flea is put into a small pill-box with a glass top and bottom, revolving on an axis like a lottery wheel and forming a miniature treadmill. After a few days' confinement herein, the flea, which in a state of nature is, as we know, excessively inclined to jump, becomes broken of the habit. It is said that the constant raps which it receives, when attempting to jump and thereby hitting the sides of its prison, incline it to walk. If this be true, and it might readily be tested by experiment, the flea's education is entirely comprised in it, and, so far as it goes, it is a species of training. I am not yet convinced of the accuracy of the statement. A "wild" flea was shown, attached by one foot to a minute ball and chain, and certainly jumped continually. If a "tame" or educated specimen had been similarly weighted, and had showed no desire to jump, it would have indicated the truth of the

theory, provided its legs were found to be sound. This, however, was not done, and all the "tame" ones, having something on their backs, might thereby be affected differently from one confined only by one "foot."

The performances may be divided into two classes: first, by fleas attached to a movable object; and second, by fleas attached to an immovable object. The former (with one exception) are employed in pulling, pushing, or carrying some object about. This portion of the exhibition is a genuine exposition of the very extraordinary strength in proportion to its size, which is possessed by this little insect. Small and beautifully executed models of horse-cars, vessels, coaches, a wheelbarrow, butterfly, etc., are pulled about, each by a single flea attached firmly to a minute pole or wire, extending from or under the object. Small bits of silk, tissue paper or other light material are attached to the knot on the flea's back, and by courtesy are termed dresses, or equestrians as the case may be.

The proprietor states that the weight of a flea is about 0.05 of a grain, or, if well fed, 0.1 grain. He states that the model of the street car exhibited weighs one hundred and twenty grains, or about twelve hundred times the weight of the flea which drags it. Whether these figures be precisely accurate or not, it is a very remarkable effort for so small a creature. Vigorous specimens are said to occur which are able to pull even a considerably larger weight.

The fleas from dogs are less strong than the human parasite, and require more frequent feeding. The ordinary flea will remain four days, it is said, without injury for want of nourishment, and will live for weeks, though diminishing in weight. They are said to live about a year; the performers average eight months, but one is recorded by the proprietor as having lived twenty-three months in his possession, the last two of which were passed in a state of great weakness.

It was noticeable that the surface over which the fleas dragged their burdens was composed of compact blotting paper on which their hooklets took good hold, and that whenever the performance of any one individual was not going on, the particular object to which it was attached was laid on its side, or

so that the insect was left, feet in air, where it could not exhaust itself by unnecessary efforts. I think that the absence of any proof of education in the above cases is quite plain.

In the second class of cases the efforts made by the flea to escape are precisely the same, but, being fixed itself, it must necessarily show its power by traction upon some movable object or by aimless gesticulations in the air.

Generally the insect is attached to a sort of style or wire in a perpendicular position with the head uppermost and the limbs extended horizontally. Usually it will remain quiet, but if disturbed by the vibration of its wire, as produced by knocking on the table, it will work its limbs about, seeking something to take hold of. If, then, segments of finest wire, fans of tissue paper, or other representations of objects in miniature are attached to its fore "feet," we shall have it apparently brandishing a stick or sword, fanning, performing on a musical instrument, etc., all of which is much more clearly seen with the aid of a lively imagination.

Two fleas furnished with segments of finest wire on their fore "feet," and placed with their ventral sides so near that the mimic swords can touch, but not the insects' feet, give a representation of a duel not much worse than that usual in most theatres. In their struggles to reach the adjacent object, it would be strange if the little wires did not clash occasionally.

"Madame Lenormand," "Rebekah at the Well," and a flea turning a miniature windmill are brought, each on its perch, so near an endless chain of ingeniously minute workmanship, that their hooklets catch in the links, and they eagerly seize the opportunity of pulling themselves, as they suppose, away from their bonds. The only result is that a little pointer turns to a number on a dial, a little bucket comes out of a well-curb, or the mill goes round. A similar but horizontally applied motion propels a little merry-go-round.

The most amusing and, at first, most incomprehensible of the various performances, is that of the dancing fleas. The orchestra are placed above a little music-box, whose vibrations cause them to gesticulate violently for a few moments, fastened as they are to their

posts. Below them several pairs of fleas (fastened by a little bar to each other in pairs, those of each couple just so far apart that they cannot touch each other) are apparently waltzing; an inspection shows that the two composing each pair are pointed in opposite ways; each tries to run away, the "parallelogram of forces" is produced; the forward intention, converted to a rotary motion, ludicrously imitating the habits of certain higher vertebrates.

I have sketched the plan of the performance, and it will be noticed that there is nothing in it which cannot be explained on the hypothesis with which we set out, namely, that all the effects produced may be the result of the natural efforts of the insect to escape, the burden of proof being with those inclined to a contrary opinion. Whatever the result to our opinion of the flea's mental powers, one can hardly avoid admiring the ingenuity with which the "stage property" has been fitted to its purpose, and the beauty of the models and apparatus.

The exhibitor claims to feed his swarm on his own arm, which exhibited a sufficiency of punctures. His whole company may be packed into a shaving-box and put in his coat-tail pocket. He claims to have originated the exhibition forty years ago. Some of the anecdotes in his little pamphlet are amusing enough, and we find the following contributions to the Natural History of the Flea.

"The flea may be easily dissected in a drop of water, and by this means the stomach and bowels may be plainly discovered, with the veins and arteries" (!) Their "amazing motion is performed by means of the great elasticity of their feet, the articulation of which are so many springs, in accordance with the exalted and lofty aspirations of the insect." And finally, "Take a well fed —(*Cimex*) and a starved flea, and place them under a glass together, and you will be afforded an amusing spectacle. The flea as soon as he perceives the puffy condition of the bug will hop upon its back, and in spite of the latter's struggles to throw him off, will succeed in extracting the blood from the fed bug's body, leaving it in quite a lean condition, while the flea becomes round, plump, and happy, after its beneficial ride."

"Fleeced" by Fallacious Fleas.

Through the kindness of H. E. Zimmerman of Kansas City, Missouri, we were favored a few weeks ago with what he regarded as a microscopical curiosity—that is, fleas in skirts and trousers. From time to time information has reached this office of some one who has been "fleeced" by fallacious fleas. It appears that many of our friends think that somebody in Mexico or elsewhere has acquired remarkable manipulative skill in putting skirts and trousers on fleas so that they may look like bride and groom. Other characters are also imitated.

The facts are that fleas are not thus clothed. A little black material is selected for the groom and a little whitish material, somewhat similar to pith, for a bride attired in white, and an entire flea is cemented on to represent the head. It requires only a casual examination, even with the low power pocket lens, to detect the fraud.

And as to skill, there isn't any. Any one who can use a pocket lens and a pair of pocket pliers could pull out material of almost any kind and arrange it in this way. At the very best, even if the fleas were thus clothed, the result would be crude in comparison with the delicate work that microscopists are accustomed to perform and consider as only ordinary operations. Microscopic objects, although beautifully prepared, are not sensational enough to attract the average person's attention, but to them a flea in skirt or trousers is a wonderful thing, as it surely would be!

Were ever five letters compact into another word as sweet as April? The very syllables seem to drip with freshening showers; to glisten with sudden, relenting shafts of sunlight, and to glow and pale with the rainbows which span the drifting, purple clouds. The songs of mating birds are in them; the scents of the quickening earth; the taste of spiced buds; the touch of light breezes; the sights of the infinite awakenings and unfoldings of the world about us. For every sense its own delights; for every letter a thousand new sensations; for every day a new heaven and a new earth.—"A White Paper Garden," Shafer.

Sawfish Mother and Young.

National Geographic Magazine,
Washington, D. C.

To the Editor:

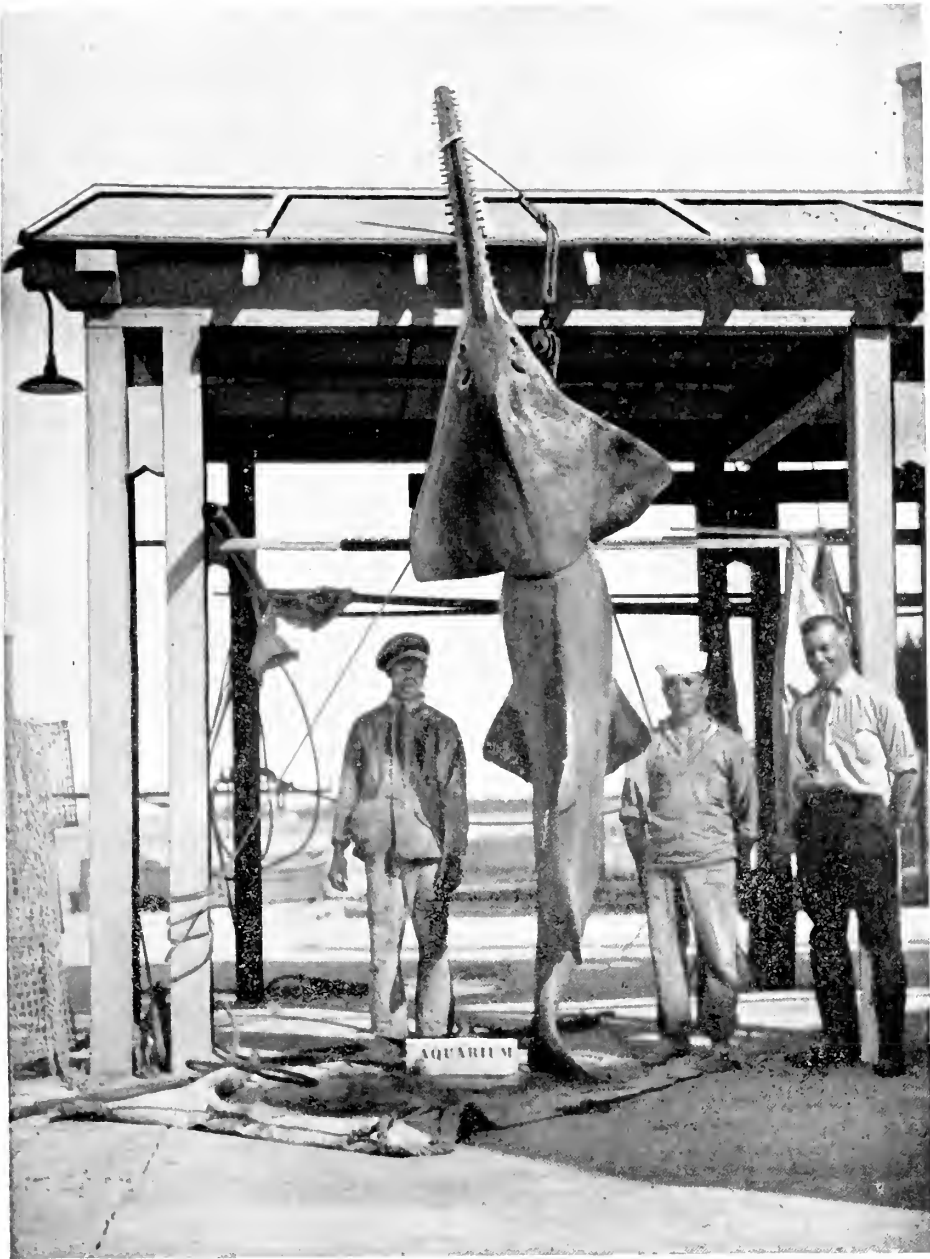
Our aquarium endeavored to secure in a big net a porpoise to see if it could be kept alive in an outdoor tank, and when hauling it in we were surprised to find that a sawfish had become entangled. A successful effort was made to bring this specimen in alive, and it was placed in the thirty-six foot tank inside of the aquarium, in which were several barracudas and groupers.

We tempted the sawfish with different varieties of its natural food but it would not eat or move around in the tank, excepting perhaps once in twenty-four hours it would move a few feet but always along the bottom. Four days after it was placed in the tank we were surprised to find that it had given birth to nine young, each about one foot long, six inches of which was saw, and nature had provided that each little saw was enclosed in a glutinous veil, thus protecting the mother and the other offspring from the saws.

At the end of three weeks the mother died, either from starvation or a broken heart, but the little fellows, knowing nothing else, began to eat what was offered, little shreds of spiny lobster and cut up mullets, thriving and growing very nicely, not being interfered with by the other fish, and taking a good deal of exercise swimming the length of the tank, generally near the floor. After three months, during which time they had grown to a little more than two feet in length, they were attacked by some sort of parasite and one by one died in spite of all we could do in the matter of change of water and change of tanks.

That is the brief story of our experience with the family of sawfish.

It is also interesting to note that other fish, namely, five barracudas, the most vicious fish to be found in the Gulf Stream, become so tame in captivity that while cleaning out the tank they do not object in any way to the attendants rubbing their backs with a long handled brush and will even now and then come up and take food almost from the hand. As you are aware, the barracuda is known as "The Tiger of the Sea" and will strike at anything



THE SAWFISH.

Courtesy of American Museum of Natural History.

moving in the water, large or small; indeed, I have had them dash up and in one mouthful take all but the head of a ten pound Spanish mackerel which I was just hauling in over the stern of the boat.

Our marine station at Miami Beach, which is a private enterprise developed to study the fish of the Gulf Stream, was opened for the first time on January 1, 1921, and because of its location

and equipment gives promise of developing into one of the great aquariums of the world within a short time.

With best wishes for the continued success of your charge,

JOHN OLIVER LA GORCE.

Birch saplings are wrapped in wonderful tints,
That art might emulate in vain;
And yet they're but products of Mother Earth,
Of sunshine and of rain.

—Emma Peirce.

TO KNOW THE STARRY HEAVENS

The Heavens in April.

By Professor Samuel G. Barton of the University of Pennsylvania.

URSA MAJOR (the big bear) now lies in its best position nearly overhead. The constellation will be seen to consist of quite a few stars other than the seven forming the familiar big dipper by means of which the constellation is usually identified. There is a group of stars west of the

at B is another pair in Ursa Major, south of which lies the faint constellation Leo Minor. Still farther east is another pair in Ursa Major at C. These three similar pairs mark three of the paws of the bear.

The ancients recognized two kinds of stars, the fixed stars and the moving

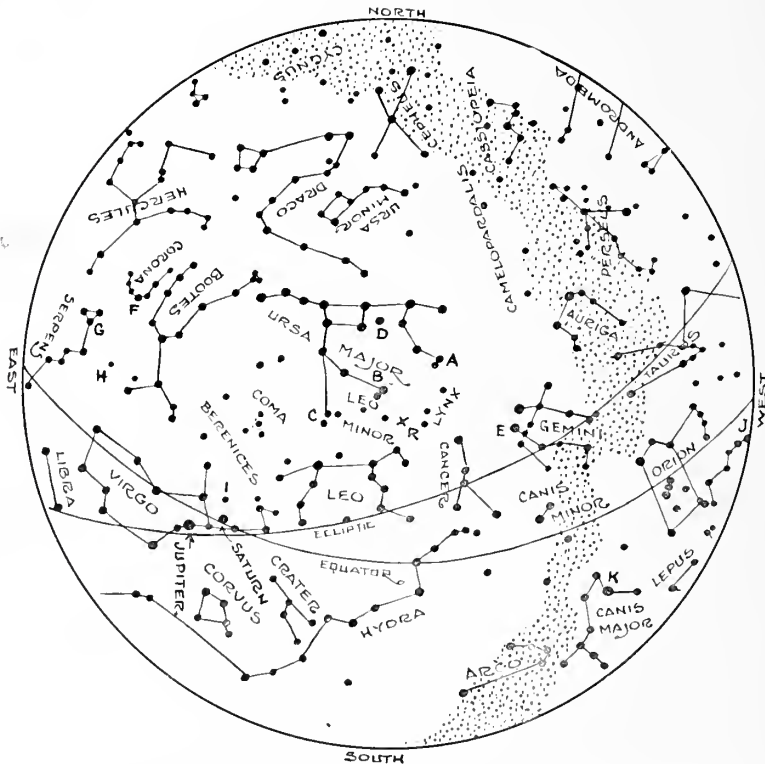


Figure 1. The constellations at 9 P. M. April 1. Hold the map so that the direction faced is at the bottom; that is, if facing east hold east at the bottom as south now is.

bowl arranged roughly in the form of a semicircle ending in a pair of stars at A at the southern end. Just south of this pair and nearly overhead is the faint constellation Lynx. Farther east

stars, called by the Greeks planets, which in their language meant wanderers. To them it seemed that the fixed stars always remained in the same positions with respect to each other, or

in other words that a configuration such as the big dipper would always remain a dipper of exactly the same shape. Bruno about 1600 seems to have been the first to question the correctness of this view and to suggest that this might not be so. Halley in 1718 was the first actually to prove that any of the so-called fixed stars move. Since then many have been found to move, and astronomers feel sure that all are moving. The motions of the stars in the big dipper are particularly interesting. In 1869 Proctor called attention to the very peculiar fact that

now the big dipper after 50,000 years, the figure being that found by joining the points of the arrows in the upper figure. There is then no longer a close resemblance to a dipper, but then by that time the shape of dippers may also have undergone changes.

Other moving clusters have since been found until now there are about seven such groups known, including the Hyades and the Pleiades. None, however, seems as remarkable as the Ursa Major group. We have not finished the story. A still further astonishing fact was pointed out by Hertzs-

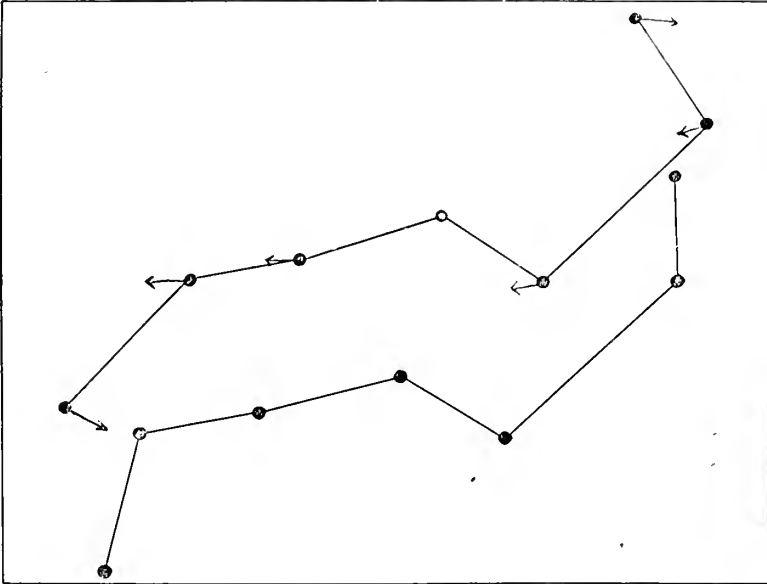


Figure 2. The Big Dipper now and after 50,000 years.

five of the seven stars forming the dipper moved slowly in parallel directions at the same rate. The other two moved in a direction nearly opposite, the motions of these two being quite similar. The facts indicated pretty conclusively that the five stars constituted a system moving together through space under some common influence. The stars are so far apart that no one would have suspected any relationship between them. The stars at the end of the handle and the northernmost star of the two on the farther side of the bowl do not belong to the system.

Figure 2 shows what is occurring. The dots show the present positions of the seven stars (1900). The arrows indicate the direction and amount of the star's motions in 50,000 years. The lower figure shows the shape of what is

sprung in 1909 when he announced that there were eight more stars moving in just the same direction as the five of the big dipper and therefore belonging to the system. Other stars have since been added, Bottlinger in 1914 including seventeen in the group, with some others which may perhaps belong also. The star next to the end of the handle of the dipper (Mizar) is a double star and close beside it is the star Alcor, which belongs to the system, as does a faint star in the position marked D, making eight in all in Ursa Major. The other nine are scattered at E in Auriga, at F in Corona, at G in Serpens, faint ones at H in Bootes, at I in Virgo and at J in Eridanus on the western horizon, one in Cygnus not visible to the naked eye and not marked very close to the northern horizon, and

one in Cetus below the southwestern horizon. Lastly the most notable member of the system is the brightest of all the stars, Sirius at K in Canis Major.

We thus find that all of these seventeen stars but one are above our horizon now, but scattered over the whole visible hemisphere. Each of them is moving slowly away from the point in Lynx marked R. This shows that the stars are moving in parallel lines. The motions appear to radiate from a point because of perspective for the same reason that meteors of a meteoric shower appear to move in all directions from a point.

With the spectroscope astronomers can determine the velocity with which the brighter stars are moving toward us or away from us. As soon as this velocity is known for a single member of the system it is a simple matter to compute the velocity with which the stars of the system are moving through space and the distance and brightness of each star. In this way the system of stars is found to be moving with a velocity of 11.4 miles per second relative to the sun, but really with a velocity of 18.2 miles. The nearest star is Sirius, 8.8 light years away. Next nearest are the stars of Ursa Major, which range from 69 to 80 light years away. The most remote of the group is the one in Cygnus, 251 light years distant. The brightness varies from 3.4 times that of the sun in the case of the star at D to 180 times that of the sun in the case of the stars at E.

The stars form a cluster which is flattened in the direction of its motion through space. The distances between some of the stars in the cluster are measured in hundreds of light years. We are nearer to Sirius than any of the stars in the system. No one has been able to tell why these stars are associated in their motions through space. It can only be accepted as a very remarkable fact. The stars in the other moving clusters are not so widely distributed. Many of the stars in these clusters are so distant that we would be unable to determine their distances accurately by the ordinary methods. When determined they give us a basis for determining or at least estimating the distances of the much more remote clusters of stars. Star clusters are found which are believed to be as far as 220,000 light years from us.

The Planets.

Jupiter and Saturn are in Virgo in the positions marked on the map. Jupiter is easily identified by reason of the fact that it is very bright—much brighter than any other object in the sky except Sirius in the southwest. Jupiter is brighter than Sirius but not much brighter. Saturn is fainter but is a bright object not far to the west of Jupiter. Just east of Jupiter is the fixed star Spica. Mars is just below the horizon in the southeast. It is in Ophiuchus. This is not one of the twelve constellations of the zodiac but a part of it lies in the zodiac even south of the ecliptic. This planet can be seen rising about midnight in the southeast. During the month its brightness increases nearly a whole magnitude, from -0.1 to -1.0 by reason of the fact that its distance from us has decreased from 82,000,000 miles to 59,000,000 miles. Venus can be seen low in the west in the evening twilight.

Art.

BY GEORGE O. SCHOONHOVEN, BROOKLYN,
NEW YORK.

When Nature stretches a canvas
In the glorious outdoor air,
Then levies on mountains and hillsides
Each to contribute a share;

When she places the trees in their grandeur
To soften the lines of the scene
And calls on that master, the autumn,
To brighten their sombre green,

There is naught in the world that can
touch it,
No art in the world to compare
With that God-given stretch of beauty
That floats in the hazy air.

Spring Beauty.

BY ROBERT SPARKS WALKER, CHATTA-
NOOGA, TENNESSEE.

Spring Beauty
On duty from March until May;
From my base rake the soil away,
A pretty round bulb you'll expose,—
It's from this humble cot I 'rose!

In Spring
I spring six to ten inches high,
On open woods soil I rely;
My leaves are linear and deep green;
Flowers palest pink you've ever seen,
With tiny veins of deeper pink.
You'll much admire, I really think.
My sepals two and petals five,
Are very, very much alive,
With buzzing bees and butterflies,
Who nectar seek beneath my eyes!

EDITORIAL

Uplifting Thoughts Suggested by Observing Nature.

Last summer I heard a sermon by the Reverend Frederick Newport, retired Congregational Minister, on the thoughts suggested by an empty bird's nest. I was spending several weeks in Camp Kineowatha of Wilton, Maine, and as is my custom, I accompanied several girls to church on Sunday. We can give only a few extracts from the address, as we have not room to publish the entire sermon, which the minister had especially typewritten and at my request sent to me. The text is "The birds of the air have nests," Matthew 8, 20. He told us that God reveals himself in the commonplace, citing several examples, and then spoke as follows:

"In the world of thought, we are very likely to find what we are looking for; and so, if among the commonplace things and experiences of life, we are constantly looking for some revelation, or manifestation of the nature and the thought of our Heavenly Father, we are sure to be often rewarded by finding it.

"One day, in one of my vacations, I looked for some shady nook, where nature was at its loveliest and best. I found it at a point where the little brook which crossed the pasture entered the woods. Tall trees partly shaded the spot. On either side of the brook were green grasses, ferns and mosses. The rippling water of the stream made sweet, gentle music. Busy insects seemed to regard it as a paradise. In the earlier part of the season the robins had evidently been drawn thither by its quiet and seclusion, for, in a little spruce tree a few feet from the brook, where the branches grew out from the trunk not far from the ground, there was a nest, well built and well preserved, but it was empty. The bird family that had built it, and used it for a home, had gone and left it, simply as a common, ordinary thing, as a remi-

niscence of bygone days, or as a means of revealing the God of the birds; according to the human being who might happen to discover it. I regarded not only that beautiful little spot, that natural summer retreat, with its varied forms of summer life and activity, as a sample of the work the God of nature can do, but particularly that empty nest, which I took from its place in the tree, in order to examine it carefully; that spoke to me specially of God, and brought to my mind some facts, some truths pertaining to the life of us humans as well as that of the birds. I ask you to consider with me some of the simple suggestions of that little object in nature."

He vividly portrayed the nest that he had taken from a spruce tree one August afternoon as a thoroughly built nest of good carpentry and masonry, and spoke in regard to instinct, concluding as follows:

"No, we can say, it is not imitation, it is not education, it is not reason, of the kind which man possesses. It is a divine endowment, just such as the lower order of beings need, in order that they may care for themselves and their offspring, and perpetuate their species."

From the impressive and instructive lessons that he taught his audience we can find room to publish only short sentences:

"If God did everything for human beings in the line of food, clothing and places of shelter, what kind of creatures should we be? Nothing better than the apes. Instead of providing the home-nest all complete for us, instead of having all our necessities and luxuries ready-made, He endows us with mental and physical power, and then He says to us, 'Here is the world of nature; subdue it, direct it, adapt it to your various uses, and find yourselves infinitely the better and nobler for having had a share in thus satisfying your needs.'"

He pointed out examples of human parents doing too much for their children and not making them self-reliant. He showed that God provides material but we are to utilize it.

"How suggestive is the empty nest of the old, forsaken, and decaying human habitations which we sometimes see. For me there is nothing so kindles the emotions and awakens the imagination as an old-time house, that has been left as a prey to the elements, and a symbol of the ravages of time. To look upon those leaning walls, that bending roof, those gaping windows, and that broken door, is to be reminded that the once proud and prosperous occupants are now no more. Their children, from the first to the third or fourth generation, have gone to live in homes elsewhere. Here was once the abode of happiness and prosperity. This house was once the object of great interest and care. Here was once the scene of parental labor and sacrifice, the playground of the highest human affections, the home joys and sorrows, the joyful home-comings, and the sorrowful leave takings. Boys and girls were born and reared here who were to fill a large place in the community or the world. But it is now forsaken and desolate, awakening deep sympathy, and kindling the fires of the poetic imagination. We are not surprised that our poet Whittier, in view of such a scene, should have written that expressive poem, 'The Homestead.'"

"In bird life it is first the nest, then the egg, then the nestling, then the fledgling, and then the full-grown bird of song. Jesus expressed it by the use of another example: 'First the blade, then the ear, afterwards the full corn in the ear.' The empty bird's nest teaches us to be ever aiming and tending toward the higher life and higher things."

We often wonder why, since the Master drew His lessons for His disciples so often from nature, that so few sermons are preached on topics suggested by nature. Most sermons are too bookish, and with too little of the spirit of God's great out-of-doors. I recognize that the few quotations from the sermon referred to do it scant justice as a whole, but enough has been said to show that there are thoughts, morally uplifting thoughts, to be deduced from the commonplace.

Foolish Fiction Fancies.

"The American News Trade Journal" for January, 1922, contains an interesting article in reference to the sale of popular magazines. It is entitled, "Can Sam McClure Make McClure's Magazine Come Back?" According to the essay it appears that "McClure's Magazine" has in recent years been having ups and downs—mostly downs. Mr. McClure has not been connected with the periodical for the past six years. In the first quarter century or so of its existence he made it successful because he published entertaining articles on the serious questions of the times. The writer then says that he has been talking with the circulation manager of another periodical in regard to the McClure position. The circulation manager said, "Nobody denies that twenty years ago when Mr. McClure was at his best he put out a magazine that made all the others sit up and take notice. But at that time people were more interested in magazines which discussed serious questions. Today about all that folks care anything about is light fiction. They want stories and pictures and, with all due respect for the abilities of Mr. McClure—and no one has greater respect for his abilities than I—yet I believe that for one of his peculiar talents, he is coming back into the field at the wrong time."

Can it be possible that only a few persons are now interested in serious questions. Do the others care to read only fiction's foolish fancies? Perhaps that is the situation and perhaps it explains why *THE GUIDE TO NATURE* has not yet obtained a million subscribers. Perhaps it is not the fault of the magazine but of the magazine readers.

But the article referred to in "The American News Trade Journal" optimistically predicts that Editor McClure can handle interesting, up-to-date questions in a manner to make them popular, but we suggest that Editor McClure shall keep his eyes steadily fixed on *THE GUIDE TO NATURE*. We believe him to be not only a good editor but a lover of the outdoor world.

Burgeoning in summer,
In blossoms manifold,
Gilding all the landscape
With its fragrant gold.

—Emma Peirce.

"Workers or Shirkers."

Under this heading Mr. Emil Medicus, Asheville, North Carolina, publishes a stirring editorial in "The Flutist" addressed to those flute players that have and have not assisted him in making successful the magazine started two years ago. He laments the fact that his colleagues throughout the country have left so much of the burden of finance and of time to fall on him. He asserts that the magazine is not receiving the financial support to which it is entitled. He calls attention to the increased interest in the flute sales, and expresses astonishment because so many of his musical friends, and of those who have a commercial interest in the promotion of the instrument, should have failed him. Again and again in his editorial he expresses surprise at the situation.

Mr. Medicus is learning what many enthusiasts in every line must learn. It is astonishing that there are so many shirkers in comparison with the workers. Take it locally. Start any kind of organization for civic improvement, to conduct a local library, to get people interested in church, men's club, lodge, women's sewing society, in fact, almost any good work, and only a few will take hold of it.

Many a naturalist has painfully learned the awful lesson of the agreement between the workers and the shirkers. The workers seem perfectly willing to do an immense amount of work and the shirkers perfectly willing that they should. We have learned that in the upbuilding of ARCADIA, in the promotion of the work of The Agassiz Association and in the conduct of THE GUIDE TO NATURE.

There are business houses dealing with supplies needed by a naturalist that are not advertisers with us, yet their business has been built up largely by the sentiment in which The AA has been an important factor for forty-seven years. There are naturalists who deplore the lack of interest in nature on the part of everybody, and yet we could mention a few who have not even taken a yearly subscription to this magazine, and others who never have done a particle of missionary work for it, nor written an article, nor, so far as we know, spoken a kind word in way of in-

ducing others to take hold and make the thing successful.

It is astonishing the number of people who are willing to see some one sacrifice his life and his finances and not give a helping hand. Perhaps the most surprising are the so-called philanthropic, the local educational people, some of whom have never given a dollar to the upbuild of The Agassiz Association or its work. This is not limited to those who hold aloof but includes many who have apparently taken especial personal pride in this as our local educational institution.

But on the other hand what bright and shining examples are those who have put their shoulder to the wheel and helped forward the good work. It seems ever thus that there should be struggle on the part of the enthusiasts and standing aloof on the part of the indifferent and even obstructing on the part of the shirkers.

The more, my dear Mr. Medicus, one considers your expression of astonishment the more one realizes that you are beginning to learn what every enthusiastic worker along every line of human occupation has to learn.

Some one of the shirkers may say, "We cannot do everything. We are limiting our efforts along other lines." This cannot be true of the flute players. Many of the professionals evidently have not come to the assistance of "The Flutist." It cannot be true even of some of our professional naturalists whose livelihood depends upon a public sentiment that incites interest in their purposes and orders for their lectures or articles. It cannot be true of some who profit by the sale of their goods as the result of our disinterested activities.

This article is offered in no spirit of pessimism. It does not censure the shirkers. It is a lamentation because they are losing some of the joys of life. I cannot imagine any one who has a hearty interest in any phase of music, literature, nature study, education, religion, golf, baseball, or any human vocation or avocation who is not willing to do something for the good of the cause as a whole. Why leave your club, your lodge, your church to remain solely in the hands of a few workers? Life, as Longfellow tells us, is real, is earnest. Let us find what we like, what

we believe in and with energy work for that cause. There is no greater joy in life than to work actively in behalf of what one believes in.

Studying the Real Thing.

"Where have you been?" asks the prim and severe tutor of her youthful charge. 'Out in the garden watching a rose unfold,' replies the child. 'Well, don't you know you ought to have been in here studying your botany lesson?' inquires the conscientious but purblind teacher."

If this sounds like an imaginary tale it is a good fable with a much needed moral.

I should have thought even more that it is a fabrication if I had not just had a similar experience with what was designed to be not a censure but a compliment. I recently delivered in a church my lecture, "Travels in a Swamp." I spent some time at the rectory and inquired if the children were going to the lecture. The older daughter said she would have to be excused because she had become so interested in her biology class at school that she wanted to stay at home and study biology.

Inasmuch as my lecture, "Travels in a Swamp," is packed full of biology and illustrated by the best possible slides that I could obtain after a quarter century of collecting and selecting, the reader, especially if a naturalist, will understand how I felt in the matter, although the remark was intended to please me as a naturalist and to show how attractive biology is.

But why single out this prim tutor who did not wish the child to watch the unfolding of a rose, or why mention the daughter who was devoted to her school biology?

Many schools and many teachers of biology occupy just that point of view. Rather than go to the real worker in biology, whether it be the all-round naturalist or the specialist, they confine their attention to the book with the ignoring of the biological outdoors.

A Good Place in Which to Study Nature.

It is with delight that we receive the annual announcement of the Marine Biological Laboratory of Woods Hole,

Massachusetts. This institution is not only of the highest possible grade for technical research but it has a kindly feeling for the beginner and the amateur. It is a delightful place in which to study all forms of marine life. Any one of our readers interested should send to the Marine Biological Laboratory, Woods Hole, Massachusetts, for further particulars.

"Natureland," an English Magazine.

We have received advance announcement of "Natureland," a new magazine to be published by Dr. Graham Renshaw, Manchester, England. The prospectus offers interesting articles, natural history photographs, notes and book reviews. In many respects it will appeal to all. It will resemble THE GUIDE TO NATURE and, like it, will contain no dull pages. We extend cordial good wishes.

Appreciation of the Woodcraft Article.

As a Woodcrafter I want to thank you for your article and its appreciation and for the very timely handling of the Boy Scout situation. The generous spirit which is characteristic of the Woodcraft management will carry it a long way and is one of its biggest assets.—From a Woodcrafter.

All Hail, New Year!

BY MALLALIEU MCCULLAGH WICKHAM, DURANT,
OKLAHOMA.

Let's drink a New Year's health,
And greet the gladsome days to come;
Each seek his priceless wealth,
In friends and lofty aims, to sum.

Let's drink that finer wine,
Which Time, alone, from Life distills;
In passion, fast entwined
The Nobler Vision, whilst it thrills!

Let's bless the glad New Year,
And speed to Fortune's Neo-land;
For hearts, with all good cheer,
Shall boast a realm and give command!

I think I once said that in all my life I had never read a page from a printed book out of doors. Nor ever will! Books are for winter—for nights, for stormy days, and for times of ailing health. Why spend time in reading, when we might be seeing? And are not our eyes to be trusted as well as another's?—"A White Paper Garden," Shafer.



THE AGASSIZ ASSOCIATION

A Large Gift for Wild Life Protection.

It will be a source of pleasure and gratification to the friends of wild life generally to learn that on March 1, 1922, the National Association of Audubon Societies of New York City received a gift of \$200,000. This splendid donation was made by a friend of the birds and children who for many years past has contributed so generously to the Association's efforts in working with young people. The development of the Junior Audubon Club idea on a large scale has been made possible only because of the generous support thus received.

All gifts from this friend of wild life have been made with the distinct understanding that the name of the donor be withheld, and it is with regret that in making the present announcement we are not at liberty to divulge his name.

The present contribution is intended as a partial endowment of the \$20,000 annual contribution which for a number of years he has been making to the Audubon work. Accompanying the check was the stipulation that the money should be held and known as the "Permanent Fund of 1922." Only the interest is to be used from time to time for current expenses and by the conditions of the gift it is to be expended as follows:

1. For the education of the general public in the knowledge and value of useful, beautiful and interesting forms of wild life, especially birds.
 2. For the actual protection and perpetuation of such forms of wild life on suitable breeding and other reservations.
 3. For protecting and maintaining adequate protection for such forms of wild life in all parts of the Western Hemisphere.
 4. Or for any one of these purposes.
- In making this announcement Mr. T. Gilbert Pearson, President of the As-

sociation, stated that this brings the permanent Endowment Fund of the Audubon Society up to \$675,000.

A Nature Study.

BY ANNA PETRUNKEVITCH, NEW HAVEN,
CONNECTICUT.

White-breasted nuthatches are such cheerful, cocky little birds that it is always a pleasure to have them about. Somehow they always seem to be happy, no matter what the weather. So to help them out during the months when everything is frozen and it is difficult for them to find food, we have constructed a shelf outside the window of our sleeping-porch. This we always keep supplied with sunflower seeds, and sometimes other visitors beside the nuthatches are attracted to it. Almost all of these are welcome, but a few, the bushy-tailed grey squirrels especially, are not at all desirable. They try to drive away the nuthatches, and take what does not belong to them. Indeed, when the nuthatches have struggled hard for five minutes to secrete seeds in the cracks in the bark of our oak tree, the squirrels rush down the trunk after them, and feast themselves upon the property of others.

In order to prevent the crafty little thieves from stealing the seeds from the shelf, made like a very shallow box, we covered this with a wire netting standing just high enough so that the nuthatches could feed easily through the meshes, which are too small for the paws of the squirrel to get through.

This seemed to solve our problem in an ideal way, but what was our surprise one day to behold a furry image seated on the shelf, busily engaged in getting dinner! And he was not using his paws! With a superb unconcern for the difficulty we had thrown in his way, he inserted his long red tongue between the meshes of the wire and licked up the seeds!

We raised the netting as much as we could, but it made not the slightest difference whatsoever to the little black-eyed villain, who still managed to get his meals by use of that lizard-like instrument of his. We have been forced to let the little wretch have his own way, and although we keep nuts and seeds on another shelf for him, he prefers the other. I imagine that he feels that he has put one over on us. At any rate there is always a trace of bravado upon his wicked little countenance whenever he sees that we are watching him!

Temple Israel of New Rochelle,
36 Banks Street
New Rochelle, N. Y.

March 1, 1922.

My dear Mr. Bigelow:

I want you to know how deeply I appreciate your trouble on our account last Saturday afternoon. After we left ARCADIA, almost every child spoke to me of the wonderful time that it had had, and how much interested it had been in your work. I think that you did a great deal to inspire them with a love for nature study. As for myself, I was both delighted and charmed, and I want to thank you and your daughters for one of the pleasantest after-

noons that I have ever spent. I hope that you will permit me to take advantage of your kind offer to visit you again later in the season.

Very sincerely,
RICHARD M. STERN, Rabbi.

A Parental Rooster.

BY DON C. SEITZ, COS COB, CONN.

The lord of my chicken yard at Cos Cob is a magnificent Rhode Island Red rooster, standing full twenty-six inches in height and built accordingly. In last year's crop of mail order youngsters under his jurisdiction, are a number of vigorous white Wyandotte cockerels. The other day a pair of these took umbrage at each other and engaged in fierce combat. The lordly Red walked over to the scene, leaped between the fighting pair, swept them apart with his wings and sternly ordered them to desist. I never saw such an action before on the part of bird or animal.

April's like a rainbow
After storm and blow.

The perfect ending to a time of stress:
For after winter's hold
Of ice and sleet and cold,

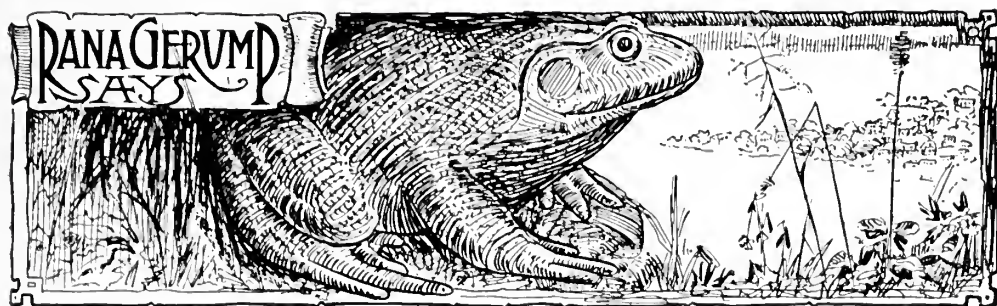
Her gentle zephyrs come as a caress.
—Emma Peirce.

SONG.

By William Watson.

April, April,
Laugh thy girlish laughter;
Then, the moment after,
Weep thy girlish tears!
April, that mine ears
Like a lover greetest,
If I tell thee, sweetest,
All my hopes and fears,
April, April,
Laugh thy golden laughter,
But, the moment after,
Weep thy golden tears!

—New York World.



Come to think of it, a bullfrog isn't a bad emblem of wisdom—better, perhaps, than the proverbial owl. Rana looks as if he has a lot of good philosophy.

How the Polly Wog Became a Frog.

VERSES BY DR. W. H. POMEROY, STAMFORD, CONNECTICUT.

WRITTEN TO AMUSE A LITTLE GIRL.

There was a little frog,
And he sat upon a log,
And he piped a little song
About the water,
And underneath the log,
A little Polly Wog,—
You'd scarce believe it was—
The froggie's little daughter.

Now little Polly Wog
Saw her daddy on the log,
And she wanted to get up
And sit there too;
But all without avail,
She wagged her little tail,
And cried, "I can't climb up,
Boo hoo, boo hoo!"

Now while Polly was at play,
A fairy came that way,
All dressed in gorgeous robes
So fine and neat,
And said to little Polly,
"Would you rather have a dolly,—
Or would you rather have
Some legs and feet?"

"O lovely sprite so airy,
Oh please, my dear good fairy,
If I might ask of one
So good and sweet,
O please," said little Polly,
"I do not want a dolly,—
But give me, please, some
Legs and arms and feet."

While the fairy waved her wand,
Polly wiggled in the sand,
Then she felt a thrill of
Ecstasy complete,
As she hopped upon the log,
By the side of daddy frog,
With the cutest little
Arms and legs and feet.

Shrill March winds awake the spring,
Till now so sweetly sleeping;
And soon to mortals she will bring
The treasures in her keeping.

—Emma Peirce.

A Lawyer a Good Nature Student

I like to meet Judge H. Stanley Finch of Stamford, Connecticut. He always has a good story to tell and knows how to adapt his stories to his audience. With me he seems to treasure up some observation regarding nature and take especial delight in showing the keenness of the idea. Recently almost a block away I saw his face aglow with anticipation of telling me something that I would appreciate. And quite right he was. He accurately described the habits of the earthworm in working over the soil and told me what a good friend of the farmer it is with as much enthusiasm as if he were the first one who had ever noticed the wonderful creature. It is a well-known fact that even a hackneyed subject may have all the charm of original discovery to a real enthusiast, and the judge was quite surprised and almost disappointed when I stated that I knew his observations to be correct because so many others had told me of seeing the same things and because the story is told with elaborate detail in "Vegetable Mould and Earth-Worms" by no less an author than Charles Darwin, who published his observations some thirty years ago.

There is one phase of the worms, however, that Judge Finch had not seen and which I find is overlooked by many other observers, and that is the way in which straw and leaves are pulled down into the burrows. This is delightfully described by Darwin, who tells also of their piling up pebbles. He gives us the astonishing story as follows:

"When worms cannot obtain leaves, petioles, sticks, etc., with which to plug up the mouths of their burrows, they often protect them by little heaps of

stones; and such heaps of smooth rounded pebbles may frequently be seen on gravel-walks. Here there can be no question about food. A lady, who was interested in the habits of worms, removed the little heaps of stones from the mouths of several burrows and cleared the surface of the ground for some inches all round. She went out on the following night with a lantern, and saw the worms with their tails fixed in their burrows, dragging the stones inwards by the aid of their mouths, no doubt by suction. 'After two nights some of the holes had eight or nine small stones over them; after four nights one had about thirty, and another thirty-four stones.' One stone which had been dragged over the gravel walk to the mouth of a burrow weighed two ounces; and this proves how strong worms are. But they show greater strength in sometimes displacing stones in a well-trodden gravel-walk; that they do so, may be inferred from the cavities left by the displaced stones being exactly filled by those lying over the mouths of adjoining burrows, as I have myself observed.

"Work of this kind is usually performed during the night; but I have occasionally known objects to be drawn into the burrows during the day. What advantage the worms derive from plugging up the mouths of their burrows with leaves, etc., or from piling stones over them, is doubtful."

I hope that our readers will come to the assistance of Charles Darwin, Judge Finch and others in trying to find out the reasons for this curious plugging up of the burrows.

Lectures on Landscape Architecture.

It is with much pleasure that we call attention to a series of informal talks, with lantern slides in color, by our good friend, Mr. Ernest F. Coe, of New Haven, Connecticut. Mr. Coe has arranged a delightful list of subjects, including the laying out of landscape and garden favorites, gardens everywhere. I do not know anybody better adapted to present these subjects than Mr. Coe. He has a genial, good-hearted, pleasing manner that wins good will everywhere. He knows his subject as the outcome of long experience, and possesses the spirit of the artist and the naturalist.

The Funny Man's Fun.

Solemn looking Editor Rodemeyer of the "Greenwich News and Graphic" is generally regarded as the funniest man in Fairfield County. The funniest thing about him is his delusion that he is bald-headed and entitled to be so considered. He never misses an opportunity to "pick on" editors that excite his envy and admiration along that line. So he jumped with delight at the brief announcement that the editor of this magazine had been elected First Vice-President of The New York Flute Club, and he rolled in ecstatic delirium as follows:

"Thus it goes; every little while an unsuspected talent is revealed in the versatile Doctor, until the entire 300 pounds of him seems to be all talent. But the disclosure that he is a flute player is hardly more startling than the incongruity in the whimsical trick of the sprite that determines our selections, in making a flute player of a man whose anatomical architecture plainly and admirably fits him for the double-bass horn or the big bass drum."

The Wrong Color.

Senator Henry Cabot Lodge, who sat with the American delegation at the Conference for the Limitation of Armament, went down into the Senate lunch room one day and found that his customary place at the table was occupied. He took a chair in another corner and this gave him a waiter who was unaccustomed to his order.

"Bring me a piece of Washington pie and a glass of milk," said the Senator, this being his invariable luncheon diet.

In a few minutes the waiter returned bearing the milk and a piece of chocolate pie. The Senator pushed the pie aside.

"I meant George Washington, not Booker," he said.

Needed an Aquarium.

Wrecked Motorist (phoning)—"Send assistance at once. I've turned turtle."

Voice (from the other end)—"My dear sir, this is a garage. What you want is an aquarium."—Burr.

LITERARY NOTICES

OUTDOOR MEN AND MINDS. By William L. Stidger. New York City: The Abingdon Press.

In his own inimitable way the author interprets the nature teachings of the Bible, beautifully describing the physical and spiritual meanings of the meadows, mountains, trees, birds and seas of the Sacred Book.

OUR BACKDOOR NEIGHBORS. By Frank C. Pellett. New York City: The Abingdon Press.

We have previously called attention to this book by a real naturalist. Mr. Pellett, through pen and camera, has delightfully portrayed a variety of interesting things near his home. We never tire of looking over his illustrations and of noting throughout all the book the author's delightful spirit of the naturalist.

THE AMERICAN ANNUAL OF PHOTOGRAPHY 1922. George Murphy, Inc., Sole Sales Agents, New York City.

The 1922 edition is fully up to the usual high standard of excellence and contains as usual many interesting articles and illustrations. The book is a delight to every one that uses a camera. It offers so many good things that we cannot spare the space even to mention them. We cordially advise our camerists to consult the publishers for particulars.

A YEAR OF RECREATION. By Ethel Owen. New York City: The Methodist Book Concern.

The book contains many good suggestions for socials, outdoor trips, for each month of the year, witches' night for October, Thanksgiving day party for November, Christmas party for December, and similar events. The author's suggestions for the outdoor trips in July and August are not extensive, but they are commendable so far as they go.

HER FATHER'S DAUGHTER. By Gene Stratton-Porter. Garden City, Long Island, New York: Doubleday Page & Company.

We can bring this interesting book to the attention of our readers in no better manner than by repeating the publisher's announcement.

Transfer "A Girl of the Limberlost" to the richer setting of California. In that luxuriant field for such a worker with nature—such a healthy, level-headed, balanced young woman that it's a delightful experience to know her—you have this new story, "Her Father's Daughter."

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combined with ability; the charm and helpfulness of her friendship; the sacredness and beauty of her love—when at last she gives it—make the appeal of Mrs. Porter's strongest and most absorbing story.

"It is better than either 'A Girl of the Limberlost' or 'The Harvester,'" comments one reader. This is cheering news when we recall that the sale of these two books in America and England has exceeded three million copies.

WILD BROTHER, STRANGEST OF TRUE STORIES FROM THE NORTH WOODS. By William Lyman Underwood. Boston, Massachusetts: The Atlantic Monthly Press.

Unusual material came by chance into unusually good hands when it came to the author of this book. Mr. Underwood is a naturalist, a photographer of uncommon skill, a litterateur



WILD BROTHER.

of ability and, as is said in journalism, he has a "nose for news." While waiting one evening in midwinter at the railroad station of a little village in the northern part of Maine he was told by the agent that the wife of a woodchopper was nursing a young bear along with her own baby. Mr. Underwood felt that this was

good material and he followed the evolution of that bear until it weighed more than four hundred pounds, his observation covering a period of fourteen years, which he says is nearly the length of the black bear's natural life. The author in closing the story of the bear's development says, as a sort of benediction, "Our bear had gone, but the memory of him was destined to live for many years to come." And he might well have added that the delightful story will live for all time. It is plain fact, plain truth with not the slightest appeal to the imagination.

THE BRITISH PHOTOGRAPHIC ALMANAC. London: Henry Greenwood & Company, Ltd.

This is a collection of photographic recipes, advertisements and guides to photography. It is edited by George E. Brown, New York City. George Murphy, Inc., 57 East Ninth Street, New York City, is the sole sales agent for the United States. The book is a voluminous one of eight hundred and twenty pages. It contains an immense amount of interesting photographic announcements and miscellaneous working material of especial interest to the technical photographer.

LEADERSHIP OF GIRLS' ACTIVITIES. By Mary E. Moxcey. New York City: The Methodist Book Concern.

The author of "Girlhood and Character," recently published, has here made a further reference to some of the important subjects in that book. She has produced a readable little manual. Similar handbooks have been prepared by the same author, entitled "Physical Health and Recreation for Girls," and "Good Times for Girls." We are glad to have these books and glad to commend them.

GIRLHOOD AND CHARACTER. By Mary E. Moxcey. New York City: The Methodist Book Concern.

Here is a helpful, clean and effective book on girlhood. It handles the educational, social and adolescence problems on a high plane of thought in a practical and a popular way, without sacrificing scientific accuracy. The book is interesting, plain and sensible. It does not exploit foolish notions about the "sacredness of sex." It lays no stress on the girl that is either overbrilliant or very dull, the abnormal girl, but offers practical advice on the natural specimen. The problems of expression, mental culture and physical development, educational and social relations are treated in a manner that is thorough and convincing.

LEADERS OF GIRLS. By Clara Ewing Espey. New York City: The Methodist Book Concern.

Leaders of girls will hail with delight this pleasing book that lists much literature on social and religious work for girls in their teens. More and more are educators convinced that some special preparation for a life of service should be available for girls. That fact tends to explain the increasing number of girls' schools, camps, clubs and similar organizations. The author knows girls, all kinds of girls,

knows them through and through. She knows their needs and how these needs may be met. She knows how to help girls and how to help them to help themselves. We cordially commend the book.

THE LIFE OF THE WEEVIL. By J. Henri Fabre. New York City: Dodd, Mead & Company.

Our readers undoubtedly know of the wonderful entomological writings by the late J. Henri Fabre, who died October, 1915, in his modest home in the south of France, at the advanced age of ninety-two. His enthusiastic devotion to the study of insects is inspiring. Book after book of extracts from his "Souvenirs entomologique" has been published, of which the present volume is not the least interesting. His statements are authoritative and trustworthy.

DOWN THE YEAR. By C. DuFay Robertson. New York City: The Methodist Book Concern.

A year may be a collection of commonplace days or the most wonderful. It depends upon the point of view. When one thinks of "twelve months of doing—working and delving into material things—twelve months of enduring life in the ordinary ways," it is suggestive of drudgery, but the author truly says:

"It is wonderful when it means twelve months of being—growing up into big things, seeing beautiful things—twelve months of living. And the difference between the commonplace and the wonderful is measured by the angle of vision between eyes that are turned down and in and eyes turned up and out; and an angle is a point. So the passage from the commonplace to the wonderful is just the turning of the eye upon its axis. You do not need feet or wings to make the journey; it is a journey of an angle, a point."

OUR WONDER WORLD. A LIBRARY OF KNOWLEDGE. Supplementary Volume—The Wonder of Life. By Marion Florence Lansing. Boston: George L. Shuman & Company.

This is a magnificent work. The supplementary volume is of especial interest to naturalists. It is packed so full of good things that it is difficult to specify any special ones. The author says, "Since living is everybody's business, life must be everybody's interest. The more we know about it, the better we shall be able to understand it. The aim of this book is to make life more interesting."

The spirit of the book emphasizes that. We heartily congratulate Miss Lansing on the excellent manner in which she has done her work. The book should have a large sale. It is one of the most inspiring that have ever come to our desk. To gaze on the attractive pages so beautifully printed and so well illustrated, is a delight.

The paper is of high grade, the printing all that can be desired and the illustrations many and clear. A large number of the photographs are by the editor of this magazine. There are many others, all by well-known naturalists skilled in photography.

THE OLD HOME. By Charles Coke Woods. New York City: The Methodist Book Concern.

The particular old home cited in this book is the old-time country farm home. The author tells us of the home and its inmates from the wedding day to the golden wedding. Perhaps the most beautiful illustration in the book is that of the old couple standing on the house steps surrounded by the vines they had long ago planted. An acceptable superclimax occurs later on in the full page illustration of the dear old lady seated in her rocking-chair before the fireplace, where she is dreaming of long ago. It is not a big book but the author has skillfully and delicately touched events in the course of a long life. The young folks will find much of interest in the poem, "Playmates," and its full page illustrations, as well as in the great variety of childhood activities so pleasantly noted.

THE BOOK OF A NATURALIST. By W. H. Hudson. New York City: George H. Doran Company.

Hudson's mastery of the English language, his well developed power of observation, together with his rather remarkable philosophy of nature, are here exemplified in an attractive and effective book. The essays are readable. They hold the attention. The topics have a sufficiently wide range to satisfy any reader. They include bats, hints to adder-seekers, beauty of the fox, the toad as a traveller, Mary's little lamb, a friendly rat and many other good things, perhaps not the least being the eulogy of the author's friend, the pig. He says the pig is lovable in life, more so indeed than when converted into bacon or ham. He thinks the pig should be included in the list of man's friends. It is probable that most men would assert that they have such a friend, but perhaps not with four legs. The book does not appeal exclusively to the skilled naturalist in the broad sense of the term, but is popular and entertaining. We hope it is one of the "best sellers."

THE LIFE OF CHRIST. By R. J. Campbell, D.D. New York City: D. Appleton & Company.

We are glad that the author points out the self-evident yet often forgotten fact that Christ was first of all an out-of-doors man, and that he drew His lessons from nature. The author says:

"He took hold of the commonest everyday incidents and turned them into sweet illustrations of spiritual truth—the shepherd walking along the hills in advance of his flock, the fisherman casting his net into the sea, the sower going forth to sow. He had an eye for natural beauty, which St. Paul never had. It has been remarked that the apostle on his missionary journeys passed through some of the most glorious scenery in the world and never gives a hint of it in his discourses. How different with Jesus! The birds of the air, the lilies of the field, the splendor of sunset and sunrise are all present to His observation and interest. He has time to think of the sparrow falling to the ground, of the ravens that God feeds, and of

the ox or sheep that falls into a pit and needs to be helped out on the Sabbath day as on any other day. No wonder the common people heard Him gladly."

From the religious point of view it may justly be added that this is a book of modern scholarship written by a world-famous preacher, who has come to the task after years of study, with striking felicity of style and a deep understanding of the expression of a great religious philosophy exemplified in an actual life. The book is readable, well printed and attractively arranged. We cordially commend it to all readers.

UNDER THE MAPLES. By John Burroughs. Boston, Massachusetts: Houghton Mifflin Company.

These essays were written during the last two years of the author's life. They have been published since his death. Dr. Clara Barrus says that while Mr. Burroughs was in California in 1921, as he pictured the river ice breaking up in the crystalline March days, the return of the birds, the first hepaticas, he longed to be again in his home, he was there in spirit, gazing on the river from the summer-house, or from the veranda of the Nest, or seated at his table in the chestnut-bark Study, or busy with his sap-gathering and sugar-making. It was in these March days with the memory of the maples of his boyhood that he suddenly exclaimed that the new book would be called "Under the Maples!"

In many respects this is one of his most interesting volumes and, if comparison were to be made, it is more like the real Burroughs than his more or less disastrous attempts at philosophy in some of his recent books. Our nature students will read this with real joy and profit.

The Apple Tree.

BY MAUD ALICE NEWCOMB, NEW YORK CITY.

The slender young birches
Shone silvery white,
The tall, slim firs were evergreen;
They laughed at the apple tree—
"Such a sight!
'Tis the ugliest tree we have seen."

The apple tree shivered
And sobbed a bit,
For its limbs were bare and cold;
But strong in its breast
Beat the heart of it,
Though its body was bent and old.

Then the South Wind spoke—
And with joyous mien
Came Spring from her sunny bowers;
She robed the limbs of the apple tree
In tenderest green,
And heaped its arms with fragrant flowers.

The slender young birches
In silvery white,
And the tall firs in dark evergreen,
Stared at the apple tree—
"Such a sight!
'Tis the loveliest tree we have seen."



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What the Animal Does.

An applicant for a place as teacher in one of the colored schools of Louisville was being examined touching fitness for the position. "What is your definition of the word 'jeopardized'?" asked the examiner. The candidate's brow wrinkled. "Which?" he inquired. "What do you understand the word 'jeopardize' to mean?" For just one-half minute he hesitated. Then he answered sonorously, "In reply to yo' question I would state that would refer to any act committed by a jeopard."

Fine Points in English.

The man had just informed the Pullman agent that he wanted a Pullman berth.

"Upper or lower?" asked the agent.

"What's the difference?" asked the man.

"A difference of fifty cents in this case," replied the agent. "The lower is higher than the upper. The higher price is for the lower. If you want it lower you'll have to go higher. We sell the upper lower than the lower. In other words, the higher the lower. Most people don't like the upper, although it is lower on account of its being higher. When you occupy an upper you have to get up to go to bed and get down when you get up. You can have the lower if you pay higher. The upper is lower than the lower because it is higher. If you are willing to go higher, it will be lower."

But the poor man had fainted!

—The Epworth Herald.



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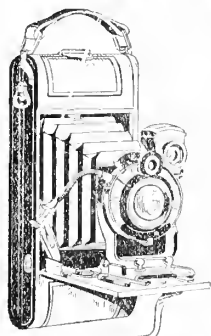
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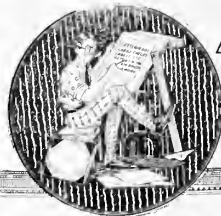
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Yours very sincerely,
(Signed) EDITH COOPER HARTMAN.

A Penitential Week.

The week had gloomily begun
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Sun.

He was beset with bill and dun,
And he had very little

Mon.

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dues,

I've nothing here but ones and

Tues."

A bright thought struck him and he
said:

"The rich Miss Goldlocks I will

Wed."

But when he paid his court to her,
She lisped, but firmly said, "No

Thur."

"Alas," said he, "then I must die!
Although hereafter I may

Fri."

They found his gloves, his coat and
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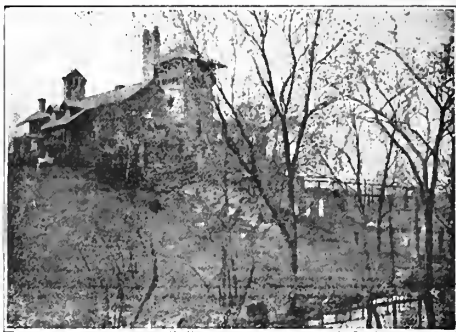
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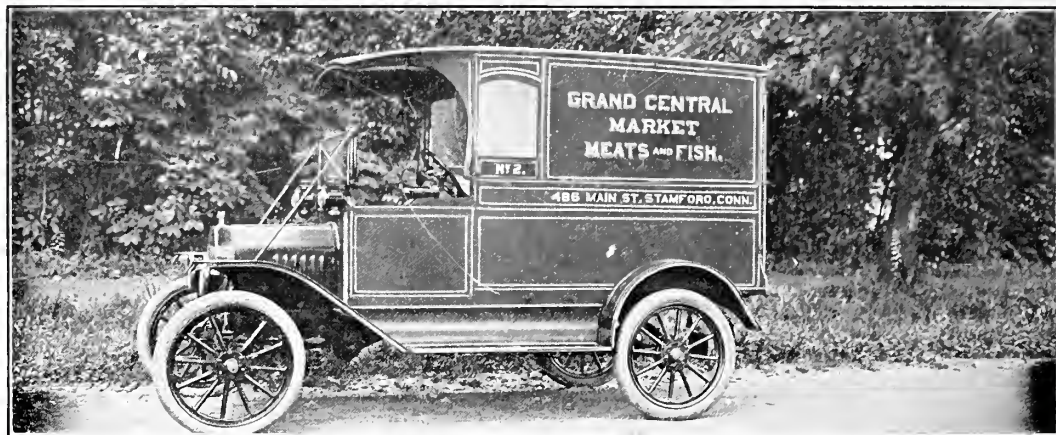
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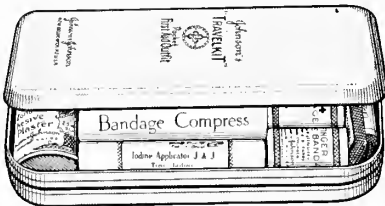
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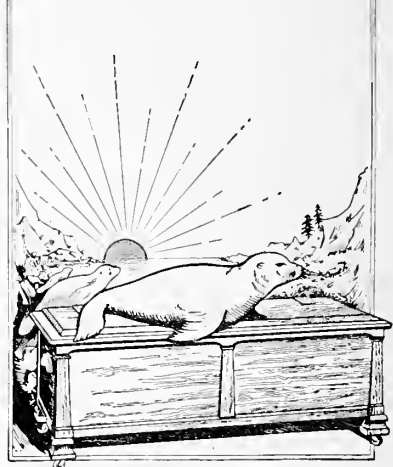
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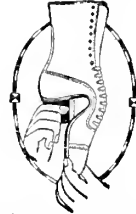
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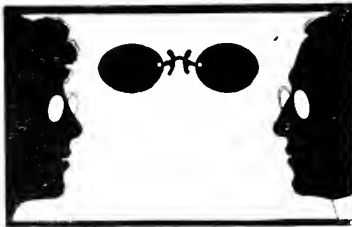
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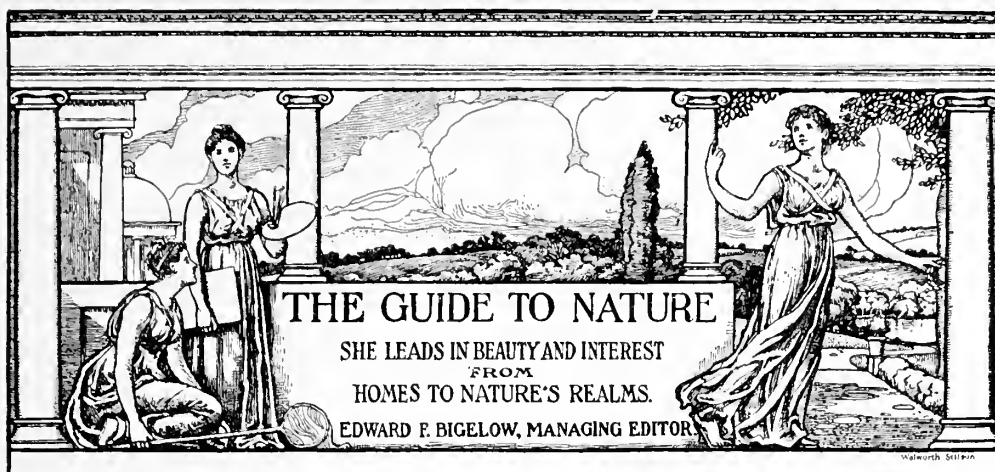
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Volume XIV

MAY, 1922

Number 12

The Grass Feeding Froghopper or Spittle Bug.

By Philip Garman, New Haven, Connecticut.

Every one is familiar with the spittle balls which we encounter when walking through forest or meadow. They wet our feet when there is no dew, or they make travelling disagreeable in small brush when we are intent on seeing an elusive red bird. Though we may call them "snake spit" or "cuckoo spit" and accompany the words by profanity, those who know recognize them as the product of one of the hordes of insect enemies of agriculture.

The grass feeding froghopper or spittle bug of the meadows, to which this article refers, is a true bug with an odd mode of existence. It "spits" only in spring, not because there is plenty of moisture at that time but because it is young. It hides and protects itself in infancy with its spittle elaborated from the juice of the grass plant. So completely is this accomplished that to date not a single insect parasite is known. Immersed in the spittle, the bug grows, molts and breathes. The air for breathing is drawn beneath the body, where it en-

ters the air tubes through spiracles, and is forced in by a sort of pump at the tip of the abdomen. If it desires to make the spittle more opaque, it forces some of the air into the ball and the sticky mass holds each bubble firmly. It feeds while still within the spittle by inserting a sharp beak into the plant. There is no chance of being surprised in the hunt for food.

But now observe the spittle itself, a viscous, slimy substance partly insoluble in water, and still allowing the insect the necessary freedom of movement. Its insolubility affords a protection from rains which work such great harm to their near relatives, the aphids. The substance is secreted from glands near the tip of the abdomen and is filled with air by means of the pump already mentioned.

Four stages are passed within the spittle and the adult bug also develops there. The adult makes no spittle, being better able to avoid enemies, but it feeds much as the young by inserting the beak and extracting the sap of plants.

Where the nymph or young lives a month, the adult lives two months or more. Thus we progress to the egg, the most completely protected of all, in which the insect spends nearly two-

the following April or May, when it hatches and the cycle goes merrily on. That an egg laid in July should not hatch until the following May is in itself of interest, since there are few simi-



A. SPITTLE BALLS ON GRASS. ABOUT NATURAL SIZE. PHOTO BY WALDEN.

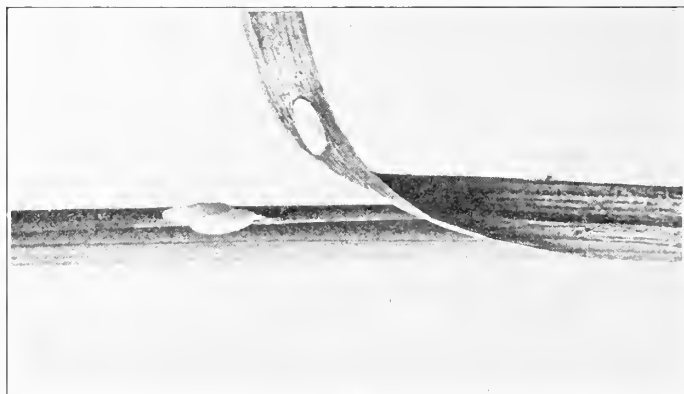
thirds of its natural existence. Laid in the sheath of the grass leaf during July, August or September, it remains until

lar examples in the insect world. But this is just another one of the protective measures which enable the spittle bug to continue its odd family history.

Such is the life of our common grass feeding spittle bug (*Philaenus lineatus* Linn). The accompanying illustrations, from Bulletin 230 of the Connecticut Agricultural Experiment Station, show the spittle masses, adult bug and eggs of the insect.



B. ADULT BUG. SIX TIMES NATURAL SIZE.



C. EGGS ON GRASS. EIGHT TIMES NATURAL SIZE. PHOTO BY WALDEN.

Mammoth Roots Obstruct Flow of Water.

BY WM. H. CLARK, SUPERINTENDENT AVON WATER WORKS, AVON, NEW YORK.

Early in the fall of 1918 it was noticed that the water pressure of the Avon Water Works was gradually diminishing. The system is a gravity system and parallels the outlet of Conesus Lake, from which the source is derived. In the first two miles of

The root was removed by sawing only one bevel piece, about eight by ten inches, on the top of the pipe where the root entered. A small rope was fastened around the head of the root, and three men pulled it out.

This was removed in July, 1919, and since that time several other roots have been taken out of a vitrified tile conduit on the same line, the largest being thirty feet in length. In the fall of



EXHIBITION OF ROOTS THAT STOPPED AVON WATER SUPPLY.

the conduit the fall is only about two feet to the mile, and it was in this section that the trouble was located. After repeated tests it was found that the trouble was a willow root, twenty-four feet long, in a ten inch water main. It was fed from a small root about the size of a lead pencil, which came from a willow tree, three feet in diameter, growing near the line.

The root entered the conduit through a wooden plug, which had been driven into the pipe about twenty years ago, and it is thought that a very small tender of the root was driven in with the plug at that time.

1921 this tile conduit was replaced by a twelve inch wood line, and no further trouble is anticipated.

From winds that fiercely blow,
To those that softness bring;
From realms of ice and snow,
To fairyland of spring:—
This, earth's awakening;
Ourselves it now behooves,
To do the obvious thing,
And shun old winter's grooves.
—Emma Peirce.

Our bodies don't have to die to make us realize the unimportance of the mass of earthy things that threaten to swamp real life.—Reverend Gerald A. Cunningham, Stamford, Connecticut.

From Wild Grass to Indian Corn.

Nature is sometimes slow, but always sure. Nature, aided in America by the crude cultural methods of the Indians, needed we do not know how many centuries to produce our maize from the wild grass, teosinte. On the other hand, that magician of plants, Mr. Luther Burbank, has produced from it perfect ears of corn in eighteen years.

The Indians found teosinte covering our plains. It bore grains or small kernels something like small wheat grains not connected together but loose in a tiny husk. The ears were from two to four inches long, thinner than a lead pencil, with each grain incased in a separate steel-like covering or sheath. Discovering that the kernels were good to eat, the Indians began to cultivate the plant. Since they always saved the best kernels for seed, the teosinte ears gradually became longer and bigger round so as to take care of extra rows of kernels. In time the chitinous sheaths disappeared.

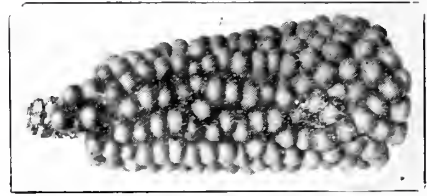
Such, the botanists believed, was the history of our maize. Mr. Burbank made his experiment in order to test the theory. Starting in 1903, he gradually developed the teosinte plant with its miniature kernels into a much larger plant with a round cob and several rows of large, fat kernels. At the end of a few years he found an occasional kernel that had emerged from its sheath. He bred only those kernels, and



FROM LEFT TO RIGHT ARE SHOWN FIVE STAGES IN THE DEVELOPMENT OF THE TEOSINTE EAR.

in a few years more the sheaths had entirely disappeared. At the end of the eighteenth year he had produced ears of Indian corn. Though the ears do not equal the superior varieties now

grown in America, they compare favorably in every way with those that the first white settlers found the Indians cultivating.—The Youth's Companion.



AN EAR OF INDIAN CORN PRODUCED IN EIGHTEEN YEARS.

The above article from "The Youth's Companion" was submitted to Mr. Burbank. He returned it with a few slight corrections which have been inserted, and stated that the transition from the grass to corn has been exhibited at the Panama-Pacific Exposition and is now in the County Courthouse of Santa Rosa.

Trailing Arbutus.

BY ROBERT SPARKS WALKER, CHATTANOOGA, TENNESSEE.

I'm a creeping fairy of long winter days,
Set in rocky woods, I witness frost affrays;
My brown, shrubby stems a-sleeping close to earth,
Hiding under fallen leaves, their buds give birth,
To my five-lobed flow'rs a-bearing frosty sheen,
White and pink, with nectar sweet that insects glean.

My dull, olive green, old rusty spotted leaves,
That's found evergreen, yet no one scarce believes,
In the month of June are promptly made anew,
And so tough they stand the winter's frozen dew!
When some winter day you think I'm fast asleep,
Rake away the crispy leaves and take a peep!

When I come a-blooming with my nectar sweet,
You may wonder whom on earth I hope to meet!
While the nipping frost is still within the breeze,
Listen to the buzzing of queen bumblebees!
Here's a secret handed me by Father Time:
I'm the Mayflow'r of New England's dreary clime!

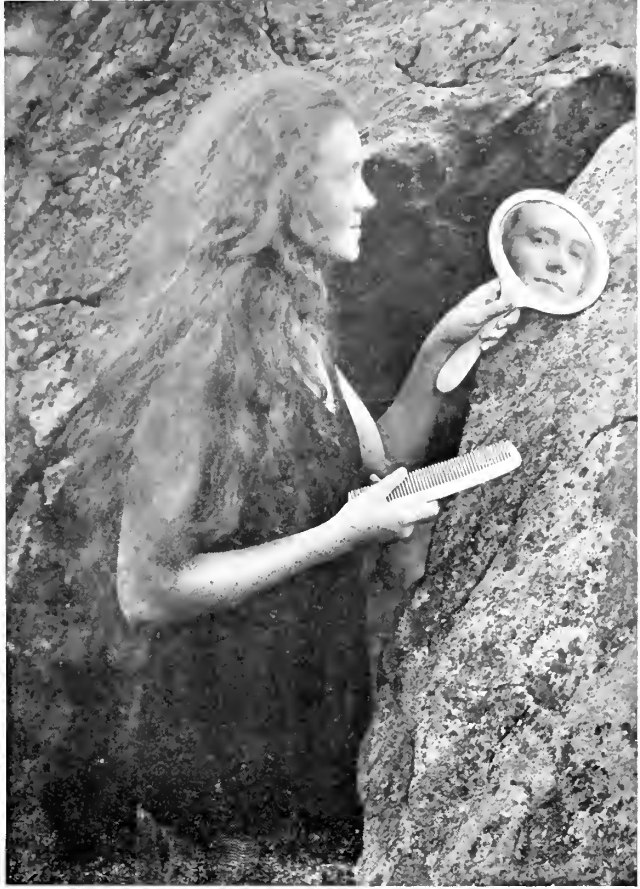
Imagination rioting
O'er what the year will bring,
In its highest flights could not surpass
The marvels of the spring.

—Emma Peirce.

A Modern Lorelei.

BY DR. EDWARD F. BIGELOW

With this title the "Photo-Era Magazine" labels the cut made from a photograph taken at Camp Mystic, Mystic, Connecticut, by the editor of this magazine. As the editor observed one of the councilors standing at a fissure in a rock, with her hair streaming freely, the thought occurred to him that the effect would be good, if he could photograph her so as to show her face in the mirror. To get the glass at the right angle required care, but the result is worth the effort. The picture is justly labelled "A Modern Lorelei."



Gill-over-the-Ground.

Gill-over-the-ground is accounted a weed,
Yet beauty and grace are its dower;
A mantle it weaves of its beautiful leaves,
Embroidered with purple flower.

—Emma Peirce.

Spring at last is here, as Nature planned,
After fitful gleams through nature's bars;
Holding in the hollow of her hand,
All we love best; while trying to understand
Her mysteries, e'en to the farthest stars.

—Emma Peirce.



Cut by courtesy of
"Our Dumb Animals,"
Boston, Massachusetts.

LOIS WILMA CLARK, BRIDGEPORT, CONN., MAKING AN EARLY
ACQUAINTANCE.

Wearing Away a Continent.

BY WILLIAM H. HUSE, MANCHESTER, N. H.

Some one has said that ever since the mountains were created they have been on their way to the sea and it is equally true that ever since the continents were raised above sea level they have had to endure the assaults of the ocean that slowly, very slowly, eats

in the cut. The larger ones in the foreground show by their seaweed mantles that they are seldom, if ever, moved. Nothing but the strongest storm waves can start them. The smaller rocks are rolled about more frequently and, in their rolling, act like grindstones on the ledge above. The wearing is mutual; the rocks are reduced in size and the concave ledge is



THE WATER AND THE ROCKS.

into the shore line except where, by rising slowly, it pushes back the waves and builds up a coastal plain.

With tremendous force the storm waves beat upon the rocky shore and break off fragments that in any way give them a leverage. Rocks decay, crevices form, and water, freezing in the cracks, forces away a piece. This is eventually washed into the deep, perhaps to rest, perhaps to be rolled about and dashed against its parent ledge, breaking off other fragments to help it in its work. The angular piece becomes rounded, is slowly ground smaller, in time becomes a pebble and eventually sand or clay.

Occasionally rock fragments are washed on to a ledge like that shown

made more concave. It is a slow process—much slower than weathering and disintegration—but it is a part of the work of wearing away a continent. This particular ledge is located on the end of Cape Neddick in York, Maine.

Old winter's bars are lowered,
And now come bursting through,
The eager hosts of Springtime,
To our delightful view.

A big, invading army,
They make the earth their own,
And bring to swift fruition,
What other years have sown.
—Emma Peirce.

I like sunrise clouds caught in the trees,
The maples aglow in sun and breeze.
—Emma Peirce.

TO KNOW THE STARRY HEAVENS

The Heavens in April.

By Professor Samuel G. Barton of the University of Pennsylvania.

THE planets will be particularly interesting during the next few months. This month our interest will be centered in the two planets which are closer to the sun than the earth and for that reason called inferior planets, Mercury and Venus. These planets are never seen far from the sun

are near their greatest distances from the sun we can see them in the evening or morning twilight. Mercury, being nearer to the sun and less brilliant than Venus, is seen less frequently. There are many who have never seen it to know it. The present month provides very favorable opportunity for those

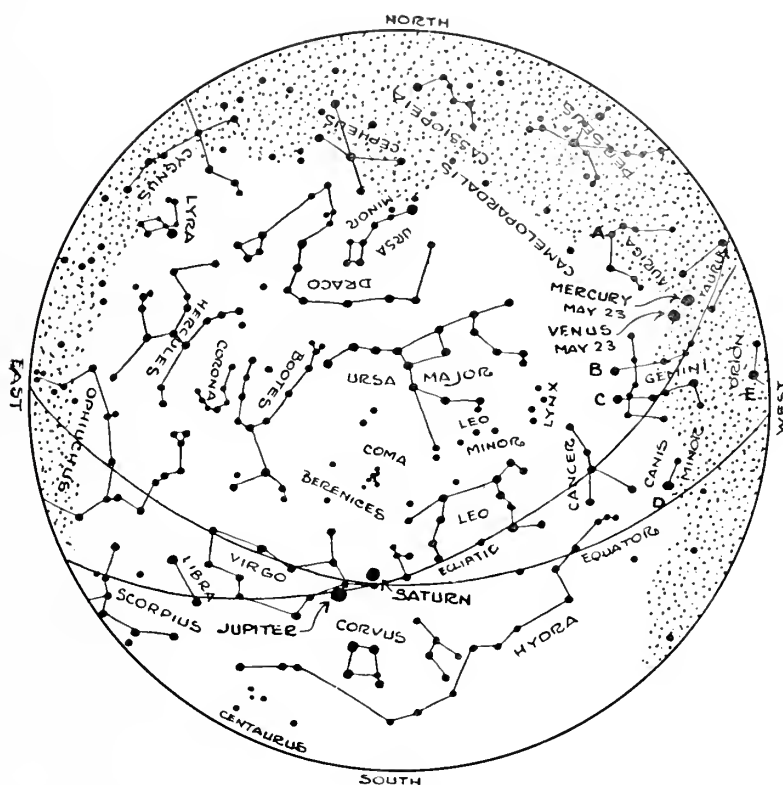


Figure 1. The constellations at 9 P. M., May 1. Hold the map so that the direction faced is at the bottom; that is, if facing east, hold east at the bottom as south now is.

in the sky, Venus not more than forty-seven degrees from the sun, and Mercury not more than twenty-eight degrees away. They are usually so close to the sun that we cannot see them because of the sun's glare. When they

who wish to know this bashful planet. It is at its greatest distance east of the sun on May 23. Its position at that time is marked on Figure 1. The map represents the appearance of the sky about 7:30 on May 23. If one looks at

this time Mercury can be seen very easily in the position indicated. But there need be no uncertainty, for just above Mercury lies Venus, the brightest of all heavenly bodies except the sun and moon. This planet cannot be mistaken. As indicated, Mercury is just below it. Mercury is brighter than any other object in that part of the sky except Capella, at A, which is but little brighter. There is no difficulty in seeing the planet if one looks in the right place at the right time.

Both Mercury and Venus change their positions rapidly. One need not wait until May 23 to see these planets. Venus can be seen at any time during the month and Mercury for a while before May 23 and a few days after that time. Many will be interested in seeing Mercury early and following it in its motions. In Figure 2 I have represented the motions of the sun and these planets and the positions of a few of the bright stars. Capella, as stated, is the star marked A in Figure 1; the twins Castor and Pollux are marked B and C; Procyon is at D and Betelgeuse at E. Mercury passed the sun and became an evening star April 24. The positions marked 1, 2, 3, etc., apply for the dates May 1, 5, 10, 15, 20, 23, 25, 31, June 5, 10, 13, 18. The sun and Venus move eastward at a nearly uniform rate, but Venus moves faster and each day is a little farther from the sun. At first Mercury moves rapidly and is farther from the sun each day until position 6, May 23, when it is farthest east of the sun or at its greatest eastern elongation, as astronomers call it. Mercury then continues to move eastward, but not as fast as the sun, until June 5, position 9, when it ceases its "direct" or eastward motion and begins its westward or "retrograde" motion. At this time, June 5, Mercury is said to be "stationary." With the sun moving eastward and Mercury moving westward they soon pass in position 12 on June 18. This is called inferior conjunction. After that time Mercury is west of the sun and is a morning star. The diagram shows why we see a planet much longer before its greatest elongation than after. At first Mercury gains rapidly on Venus, but it does not quite overtake it. The closest approach is on May 20, when it is a little over three degrees from Venus, position 5.

They remain near each other for a while and then separate rapidly. Venus continues its eastward motion until November 4, at which time it will be south of Antares in Scorpio, a little beyond the southeastern boundary of Figure 1. In the interval it moves half-way around the sky.

What is the law or principle underlying these curious motions? This question was asked as soon as such motions were observed. A careful record of the facts of observation was necessary before the explanation was possible. The cause is thoroughly understood. This cause is explained in Figure 3. Mercury moves around the sun in an orbit which is nearly circular, but with the sun out of the center. Venus and the earth move in nearly circular paths with the sun at the center. It is the fact that we make our observations from the moving earth that complicates the apparent motions. The real motions are rather simple. Each planet is in the position shown by

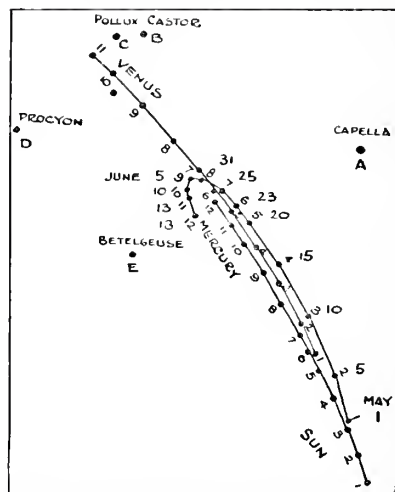


Figure 2. Apparent motions of the Sun, Mercury and Venus during May and June.

corresponding figures, the dates and figures corresponding with those used in Figure 2. On April 24, at O, Mercury was at superior conjunction on the opposite side of the sun from the earth. By May 1 it has moved to position 1 to the east of the sun, but the earth has also moved. The diagram shows the relative positions. Mercury appears farther from the sun in the successive positions until position 6, in which the line from the earth to Mercury is tangent to the orbit of Mercury.

In this position we have the line to Mercury making the greatest angle with the line from the earth to the sun; that is, we see Mercury as far from the sun in the sky as possible. After this time it draws closer to the sun until it is in the same direction as the

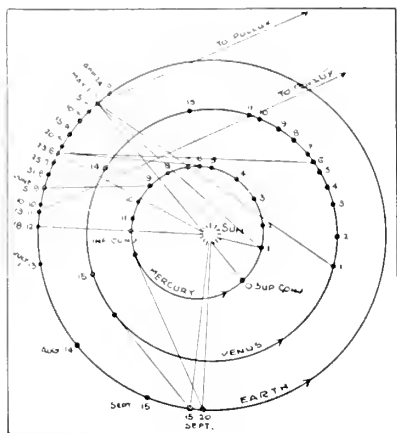


Figure 3. The real motions of the planets.

sun at inferior conjunction in position 12, on June 18.

I have also shown the motion of Mercury with respect to Venus. The direction of Mercury approaches that of Venus until May 20, position 5, after which the planets separate. The figure also shows the motion relative to one of the fixed stars, Pollux. The stars are so far away that they appear in the same—that is, in parallel—directions wherever the earth may be. At first both planets are in directions very different from that of Pollux. Their eastward motions carry them closer to it. On June 5, position 9, Mercury is closest to Pollux. Venus continues to approach Pollux. On June 13, position 11, it lies in the same direction as Pollux and passes it. They are not quite in the same position as shown in Figure 2, as neither Pollux nor Venus lies exactly in the plane of the earth's orbit. For a similar reason Mercury does not move westward in quite the same apparent path as it moved eastward, Figure 2.

The positions of the planets in September are also shown. On September 15 Venus has reached its greatest eastern elongation and a few days later Mercury is also at its greatest eastern elongation, after having made a complete revolution in its orbit and back to

the given position. It is unusual to have the two planets near their elongations at the same time. The time of the year, however, is unfavorable.

We have described these planetary motions in detail. The value and interest in the discussion will depend upon the faithfulness with which the actual motions in the sky are followed. To understand Figure 3, remember that you are on the earth. Therefore hold the eye at the point on the figure where the earth is at the time and hold the line to the sun in such a position that it will point to the actual sun. Then with the plane of the paper in the plane of the ecliptic the planets' positions will be indicated. One could scarcely have a better opportunity for this study.

The planets Jupiter and Saturn are in good positions, as shown on Figure 1. Excepting Venus, Jupiter is the brightest object on the map. Mars is just below the horizon in the southeast. It can be seen later in the evening. During the month its distance from the earth decreases from 59,000,000 miles to 45,000,000 miles. Its brightness increases from -1.0 to -1.9 . At the end of the month it will be as bright as Jupiter. It will be nearest to the earth and brightest next month. A fuller discussion will be given then.

Telescopic View of Shooting Star.

BY THEODORE H. COOPER, BATAVIA, N. Y.

On November 25 at about six o'clock, I saw a "shooting star" through my telescope. I had several times tried to get a glimpse of such a star but had hitherto been unsuccessful.

I had just left the region of the Pleiades, had been trying to count the stars in that group visible with my instrument, and was examining one by one the stars in the Big Dipper. As when using the microscope, I always keep both eyes open. When this star passed directly beneath Ursa Major I was fortunately quick enough to see it as it flashed through the field of view.

Long Distance Shooting.

The new night-watchman at the observatory was watching some one using the big telescope. Just then a star fell. "Begorra," he said to himself, "that felly sure is a crack shot."—Toronto Goblin.



The Rock of Ages.

Is there any hymn sung by Christians that is more beloved than Rock of Ages? Probably not. A good many of those who sing it know that it was written some hundred and fifty years ago by an English clergyman, the Rev. Augustus Toplady, but fewer persons know that the hymn was the result of an actual experience of the author's while he was curate in charge of the



THE GREAT ROCK IN SOMERSETSHIRE, ENGLAND, THAT INSPIRED THE WORDS, "ROCK OF AGES, CLEFT FOR ME."

parish of Blagdon, near Bristol. Mr. Toplady was walking through the rough and hilly country of Somersetshire not far from his parish when, in passing through the defile known as Burrington Combe, he was overtaken by a violent rainstorm. He found refuge from the weather in a deep cleft in the rocky side of the combe, and while he sheltered himself there the idea of the hymn entered his mind. It is not unusual for church people who love the hymn to make pilgrimages to the spot where it was composed. Our

picture shows a group of pilgrims gathered at the foot of the riven rock.—*The Youth's Companion.*

A Case of Ingratitude and Lack of Appreciation.

A superlative Architect and Builder of pleasing surroundings permitted a family to occupy a wonderfully beautiful home and grounds for a period of time. The home was well equipped with innumerable attractions and beauties, and offered possibilities of inexhaustible enjoyment. Father, mother and the children were given full access to the beautiful grounds and to every room in this wonderful house. A rumor of remarkable ingratitude we have personally investigated and have found to be true. The man never even thought of the Owner nor of any of the beauties of the premises. He devoted all his attention to piling up wealth in a near-by bank and what time was left he passed with his fellow associates in talking about foolish things of trivial importance. The woman met others of her set and devoted her time to shuffling colored bits of paper and in talking about the neighbors. They called it having a social time. The children were never encouraged to appreciate the grounds nor the home but ran with their mates here, there and everywhere in a thoughtless manner, neglecting all the wonderful entertainment that might have been secured in home and community by observing the varied environment. They devoted most of their time outside of some perfunctory school work to children's parties and lovesick stories of the movies.

Where was this astonishing family and where was there such a beautiful home? Perhaps it is yours. And who was the kind Architect that provided it? You know Him. They talk about Him a little on Sundays and occasionally at a funeral. Ministers preach about Him and when they find somebody that really appreciates His beautiful home and the surroundings that He has provided for man, they think that some one is a little queer, but in fact everybody who does not appreciate this home of Mother Nature and its surroundings is queerer still.



THE AGASSIZ ASSOCIATION

Additions to Our Membership.

Corresponding.

Mr. A. L. Graffam, East Lynn, Massachusetts.

Mrs. Gayer G. Dominick, Stamford, Connecticut.

Sustaining.

Mr. Gayne T. K. Norton, New York City.

Mr. Thornton W. Burgess, Springfield, Massachusetts.

Mrs. Josiah Hatch Quincy, Boston, Massachusetts.

Mrs. Thomas Hastings, Old Westbury, New York.

Mr. A. McEwen, New York City.

Helen and Willard Parsons, White Plains, New York.

Mr. Julius Prince, New Rochelle, New York.

Mr. Edwin W. Humphreys, New Rochelle, New York.

Mr. J. M. Heiser, Houston, Texas.

Contributions.

Mr. Walter B. Dodge, Sound Beach	5.00
Telephone: "Come in and see me."	25.00
Mr. George W. Haynes, New York City	5.00
G. B. Affleck, A. B., Springfield, Mass.	5.00
Mr. Hugh M. Anderson, New York City	15.00
John Waite Avery, M. D., Stamford	1.00
Mr. C. D. Romig, Audenried, Penn.	2.00
Professor M. A. Bigelow, New York City	5.00
Mrs. C. O. Miller, Stamford	10.00
Mr. Arthur A. Carey, Waltham, Mass.	3.00
Mr. Frank J. Myers, Ventnor, N. J.	8.00
The Lend a Hand Club, Sound Beach	5.00

Helen and Willard Parsons, White Plains, N. Y.	1.00
Mr. Armstrong Perry, New York City	6.00
King's Daughters of Sound Beach	10.00
Mrs. Charles E. H. Phillips, Glenbrook, Conn.	10.00

Miscellaneous Contributions.

Mrs. Newton, Sound Beach: Shells and fancywork showing how shells are crocheted into curtains, portieres and lambrequins.

Miss Susan Lockwood, Sound Beach: Wounded red-shouldered hawk found in the road.

Mr. J. Warren Jacobs, Waynesburg, Penn.: Jacobs Food Shelter for Winter Birds.

Thomas A. Edison, Inc., Orange, N. J.: Record for Edison Diamond Disc Phonograph presented to The Agassiz Association by Mr. Thomas A. Edison in 1916.

Mr. E. M. Ayres, Stamford: Liberal supply of postal card folders from Florida.

Mr. B. Wilson, Stamford: Copy of "Vox Stellarum. A Loyal Almanac for the Year of Human Redemption 1922."

Mrs. George Ferris Peck, Sound Beach: Specimen of flax grown in 1833 by Captain George Ferris on his farm on Greenwich Cove. The part of the farm on which the flax was grown is now known as Frost's Beach, Sound Beach.

Philanthropic People, those who care for the welfare of others, especially the young folks, are cordially invited.

What George Washington said (in his farewell address):

"Promote, then, as an object of PRIMARY IMPORTANCE, institutions for the general diffusion of knowledge."

Congratulations to The Audubon Societies.

It is encouraging to note as announced in our last number that the National Association of Audubon Societies is coming into its own somewhere near the deserved status of a natural history association. The recently announced endowment of \$200,000 brings the amount up to \$675,000. That gives a fairly good working basis but more could be used to advantage.

It is, however, a puzzle to know why The Agassiz Association in its forty-seven years of existence has not had a dollar of endowment although we cover all nature, including a general natural history interest in birds. It is true that we have inculcated the law of love rather than the love of law, and have not tried to obtain legislative protection for birds or for any other phase of nature. We believe in the student point of view and aim at the human being rather than at the birds, plants or quadrupeds. In some respects this point of view is good and in some it is evidently bad. It surely does not appeal to the wealthy contributor as much as does lawmaking, reservations, etc. But after all we in our field have perhaps been instrumental in bringing about this fairly good endowment to the Audubons because of the sentiment which we have steadily inculcated for about a half century. We have tried to do our part in making a popular demand for laws for protection. It seems to us as if our point of view is the best but that is probably what everybody thinks of his own outlook. It would seem as if there were no need of laws for protection, preservation or kindness, but so long as human nature is as it is, laws are necessary. It is a good and encouraging thing to learn that financiers are willing strongly to back up societies that say, "Thou shalt not."

But then there is another phase of the Audubon Societies—they as well as ours are educational. They have done an immense amount of work in changing public sentiment. We congratulate them upon having the ways and means to carry on their good work. Let some financier come to the aid of The Agassiz Association and other organizations dealing largely with the educa-

tional aspects of nature. But over on the extreme we find such well endowed organizations as the Carnegie Institution dealing with technical science. It seems to me as if both ends of the line, "Thou shalt not" to the wrong doers and "Thou shalt know more" also to the extreme, are well endowed, but in the middle ground occupied by The AA there is need of more money and more workers. The extremes are so well provided for that the next duty is to bring the great masses of humanity into a proper appreciation, a proper amount of protection and a proper amount of knowledge—in other words, let us popularize the study of nature.

In Union Is Strength.

The ideal union for all local organizations of nature study is The Agassiz Association, because of the fundamental principles back of this organization that have been demonstrated to be practical for its almost half century of existence. A local company is known as a Chapter and is essentially free to carry on its work on its own way. It is, however, better to be a part of a large federation of nature Chapters rather than to be an isolated local club or society. In The Agassiz Association there has always been a spirit of camaraderie and helpfulness. By its clearing house, ArcAdiA, at Sound Beach, Connecticut, it is able to interchange observations and give information on every question that may arise in nature study.

This is a day of doing things in a collective manner. No longer is the laborer any more isolated from his fellows than is the capitalist. Organizations of women, men and the young folks are coming into touch with one another. Woodcrafters, Boy Scouts and Camp Fire Girls have found it of advantage to be working throughout the country in one harmonious whole. We therefore strongly advise every isolated club and society of nature study to become affiliated with the larger organizations. Those who are limited to bird study naturally take the Audubons; those who are interested in kindness to animals take the Humane Societies, but when it comes to a general interest in

nature from old to young permeated by a social spirit then we believe The Agassiz Association has demonstrated in its existence that it is the best. In fact we do not know of any other general popularizing federation of nature interests of a scope so wide and principles so effective. It is not primarily for the specialist so far as the specialty is concerned, but it is for the specialist so far as he is quickened by the missionary spirit of helpfulness to others. If your local company of nature students wishes to become a Chapter of The Agassiz Association correspondence is cordially invited.

Report From the Greenville College Chapter.

An interesting report has been received from S. Howard Bartley, Secretary and Treasurer of our Greenville College Chapter, Greenville, Illinois. The President is Miss Benlah Browning Burnett; the Vice-President, Miss Ruth Fish; the Curator of Collections, Howard Earl Updyke—all students in the college. From Mr. Bartley's personal letter we quote the following:

"During the year 1920-21 of the college considerable interest was manifested in the Chapter. Hikes and trips in the fall and winter were taken for the purpose of seeing the forms of life that could be found at that time of the year. We took early morning hikes in the spring for the observation and study of the birds. Many kinds are found in this section of the country. Cardinals and blue jays are two of the most numerous inhabitants of our woods.

"In May, 1921, a naturalist, Caldwell, from Massachusetts, was obtained. He gave us an illustrated lecture for the public. It furthered the interests of the Chapter in a lasting way.

"Our college yearbook, 'The Vista,' is a publication of much importance. In this we were duly represented. We had a page, consisting of a cut of the Chapter in action and a sketch of our purposes and activities.

"This year (1921-22) it was deemed wise to group the members of the Chapter into three departments, so that there could be more specialization and thoroughness in the work done. There

is a department for the study of birds, one for plant life and the other for the study of insects.

"We are endeavoring to raise funds to buy a collection case for the Biology Department of the College. This may be done by a program.

"Our aim is to establish and perpetuate in this place a study of nature which shall be first-hand and not superficial. In this our President is a noble and untiring leader."

Observations from Our New York Nature Chapter.

REPORTED BY THE SECRETARY, MISS HELEN SMITH.

Last summer one of our members noticed, during July and August, a pretty natural phenomenon. In the quiet coves and inlets of the St. Lawrence River she saw about seven o'clock every evening bright, silvery sparkles appear and disappear above the water. As she approached the sparkles they were extinguished. They were larger than fireflies but suggested fireflies of silver. By approaching a cove silently, she discovered that the sparkles were caused by tiny minnows leaping out of the water and displaying their silvery sides as they leaped. For what reason these fish thus leaped we have been unable to discover. They may have been feeding on minute flying insects. It was a unique sight. The members who noticed this phenomenon says that although she has been spending many of her summers at the St. Lawrence, she had never previously observed the tiny "water sparkles."

One other observation was that many trees, bushes and plants in a part of the country are, during the summer, covered with a thick, glossy, varnish-like substance, which makes them shine unnaturally. This was finally found to be the excretion dropped by aphids living in trees.

What Agassiz Really Said.

Stanford University, California.

To the Editor:

"Study Nature, not Books," is often quoted from Agassiz. What he really said, as I took it down at the time, was: "If you study Nature in Books, when you go outdoors you will not find her."

DAVID STARR JORDAN.



Ornamental Plants for Personal Entertainment and Friendship.

Preparations for the extensive horticultural experiments in ArcADIA include a rustic hardy garden made from the branches of the huge oak limb blown off in a severe storm last year and causing considerable damage to the apiary by crushing and upsetting some of the hives. This calamity has as much as possible been turned into a benefit, and what is a loss to the picturesqueness of the apiary will be an addition in horticultural lines.

The experiments are in harmony with the entire spirit of ArcADIA—that is, we do not expect to produce any new or better varieties nor to especially develop the beauty of flowers. That work is well done by the expert horticulturist in elaborate greenhouses and gardens. However, there is more in plants than mere beauty or utility. There is a real nature interest that may be used in developing personality in the same sense that other realms of nature have been used very successfully in this Institution.

There are at least three main points of view of plants and flowers. The first may be called the generally useful, whether for the beauty or for food. The second is limited to the botanist and is taught in biology classes in schools and colleges. The third point is almost totally neglected and is what might be called personal friendship and interest as a matter of expression and development of human beings. This phase is more difficult to get at and perhaps more difficult to popularize than the others. But that has also been the experience with various phases of nature. For example, the ordinary vegetable garden is well-known to everybody from the utility point of view, but comparatively few get from it the benefit

of the real uplift in thought. That same uplift may be developed through ornamental plants, for after all, plants are living and growing things with their own identity to be cultivated as a matter of personal companionship and friendship.

There will also be suggestions for bringing into more general appreciation some of the most beautiful yet generally unknown ornamental plants.

Young Foxes for Pets.

The daughters of Mr. and Mrs. Herbert Madison, Sound Beach, Connecticut, saw some little animals playing in the field and captured them with the assistance of their parents, Mr. J. T. Denning and Edward Thineck on Thursday afternoon about six o'clock. Not knowing what the little fellows were they at once telephoned Dr. Bigelow at ArcADIA, asking if they might bring them down and find out. They reached there in a few minutes and all hands, including the Bigelow family, greatly enjoyed the four young foxes.

Although they were captured from the wild not half an hour before they were as readily handled and appreciative of the petting as if they had been tamed for a long time. They seemed especially fond of getting under one's coat apparently for hiding and for the warmth. Both families were so entertained supper was forgotten. It might also be said that the pleasure included the foxes. Dr. Bigelow says that no nature discovery that has been brought to ArcADIA has proved more interesting. The little fellows soon learned to eat readily and are a great source of delight to the Madison household and their friends.

On Saturday afternoon Dr. Bigelow photographed the foxes and was informed that subject to the instructions

of the Game Warden they are to be turned over to the State Farm or otherwise disposed of.

Old-time Flax Donated to ArcAdiA.

Mrs. George Ferris Peck of Keof-feram Park, Sound Beach, Connecticut, has donated to ArcAdiA a specimen of flax grown a long time ago in Sound Beach. This very interesting relic of our earliest days will be placed in the Bruce Museum. The information accompanying the flax states that it was grown in 1833 by Captain George Ferris (father of Mrs. Maria Keeler and grandfather of George Ferris Peck and Mrs. Joel Anderson) on his farm on Greenwich Cove, now known as Keof-feram Park, which name was derived from that of the Indian Chief, Keof-feram, from whom Joeffrey Ferris bought the tract of land. The part of the farm on which the flax was grown is now known as Frost's Beach.

Howard Gwynne Dyer of Newington Junction, Connecticut, is student and assistant at ARCADIA.

Words of Appreciation.

For some time I have been intending to drop you a line of greeting and appreciation for your interesting little magazine and the good work you are carrying on. To me it is the wonderful spirit of the whole thing that appeals most strongly. Among nature lovers there seems to be a more tolerant and sympathetic attitude towards humanity in general, a more sincere appreciation of the wonderful gifts which God has bestowed upon us, and a kindlier feeling towards the other creatures of the earth, than among those who have not felt the gentle touch of Mother Nature in their hearts. This is the feeling that comes over us when we breathe in the pure, fresh air of the fields and woods, when we hear the roar of the sea or the songs of birds, when we see the beauty of the midnight sky on a clear summer night, and when we begin to understand the workings of the wonderful plan in which every creature, great and small, has its part to fill. I want to express the wish that your work will meet with ever increas-

ing success in bringing the kindness and joy of nature to folks everywhere, and I hope that I may some day be able to help the cause along.

THE GUIDE TO NATURE has offered me the opportunity of forming many pleasant friendships with nature lovers in other parts of the country. I have corresponded with several persons who were particularly interested in birds, and enjoyed comparing notes with them, but I believe my most interesting correspondence has been with reptile enthusiasts, and I have become a member of the Reptile Study Society through my acquaintance with other members whose names I saw in THE GUIDE TO NATURE.—J. M. Heiser, Jr., Houston, Texas.

The members of our household look forward with keen interest to the arrival of THE GUIDE TO NATURE each month. It is always not only brimful of information intensely interesting to nature lovers, but also in the uplifting spirit of a personal broad-minded enthusiasm which can only be the result of the personal unselfish devotion of those who have brought into being and maintain your publication.—Ernest F. Coe, New Haven, Conn.

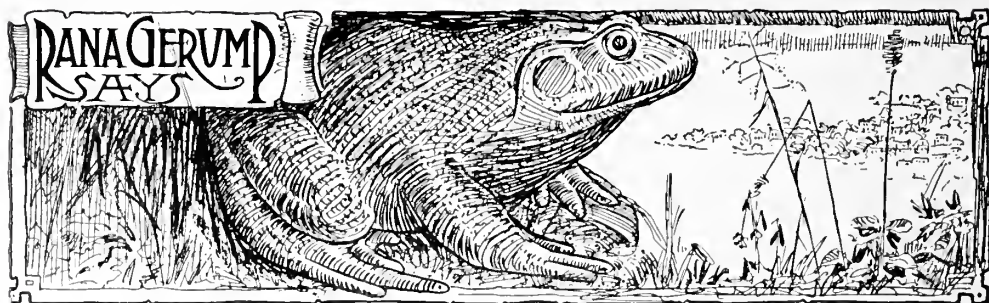
We realize the good work which you are doing for horticulture. We all profit by your love of plants and flowers and we certainly will do our part to help you whenever we possibly can.—Bobbink & Atkins, Rutherford, New Jersey.

The blessed new birth of imagination and hope, which comes to the nature-lover in the youth of the year, makes all things seem possible.—"The Practical Flower Garden," Ely.

In Early March.

The exquisite green of the willow fringes
Floating upon the breeze;
The bronze and gold of the blossoming elms
Crowning the graceful trees;
The tasseled poplars burgeoning
In many varied shades;
And best of all, the maples' red,
In all the forest glades.

—Emma Peirce.



Come to think of it, a bullfrog isn't a bad emblem of wisdom—better, perhaps, than the proverbial owl. Rana looks as if he has a lot of good philosophy.

Samuel Scoville Lectured in Stamford.

Samuel Scoville, Jr., a lawyer, writer and naturalist, of Philadelphia, Pennsylvania, well-known everywhere, lectured in Stamford, his native home, on Thursday, March 15. Mr. Scoville's mother was the daughter of Henry Ward Beecher and his father was for a long time pastor of the Congregational Church of Stamford. Harriet Beecher Stowe was his great aunt. From such an oratorical and literary family we naturally expect skill along those lines.

Mr. Scoville is not an elaborate speaker but goes directly to his subject with a simple and pleasing manner without any oratorical flourishes in either gesture or voice. His treatment of the subject is pervaded by a delicate humor which does not bring forth hearty laughter but a gentle ripple of appreciation.

He is certainly a naturalist. He has studied things at first hand and delights in nature. He imitated birds, told interestingly of various flowers and of four-footed animals. His treatment of the subject is not that of a specialist but of the so-called old-time all-round naturalist. It was pleasing to learn that the species is not extinct.

The New York Philharmonic Society.

During its eightieth season the Philharmonic Society of New York has given sixty-eight subscription concerts in Greater New York. Stransky conducted thirty of these, Hadley one, Mengelberg thirty and Bodansky five, and one other concert was divided in direction between Mengelberg and Bodansky. Henry Hadley also conducted his own compositions at several

of the Stransky concerts. Stransky also conducted Philharmonic concerts at Princeton, Yale, Smith College, and in Worcester, Holyoke, Springfield and New London, while Mengelberg directed performances in Boston and at Yale. Four concerts were given under Stransky and Hadley in Brooklyn at the Commercial High School, under the auspices of the People's Institute. In addition to these Philharmonic concerts the orchestra played three times in New York under Richard Strauss and twice under Van Hoogstraten, once for Madame Ducarp under Stransky, and forty men of the orchestra played at Father Finn's concert in Carnegie Hall.

In commemoration of the conclusion of its eightieth season the Society gave two special performances of Beethoven's Ninth Symphony, with quartette and chorus, one at Carnegie Hall on Wednesday evening, April 26, and the other at the Metropolitan Opera House on Sunday evening, April 30. Florence Hinkle, Merle Alcock, Lambert Murphy and Royal Dadmun constituted the quartette and the chorus included the full strength of the Oratorio Society of New York. Mengelberg conducted.

There will be very few changes in the Philharmonic personnel next season, contracts with most of the present members of the orchestra having been renewed. Soloists engaged for the first half of the season so far include Josef Hofmann, Heifetz, Schelling and Casals.

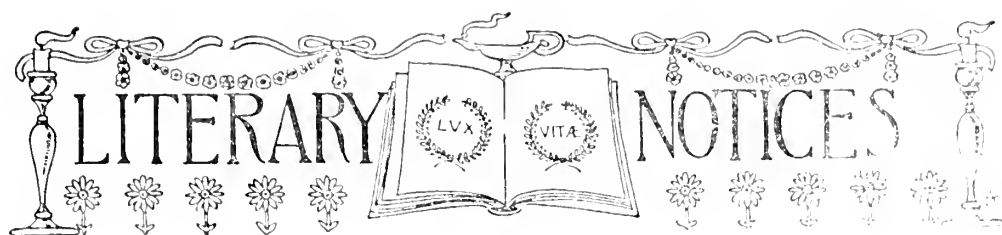
Embodying resurrection.

Through sunshine and through showers,

The most eloquent of sermons

Are in the Easter flowers

—Emma Peirce.



LITERARY NOTICES

ANOTHER HARDY GARDEN BOOK. By Helena Rutherford Ely. New York City: The Macmillan Company.

This is an acceptable supplement and pleasing companion to the author's first book, "A Woman's Hardy Garden." It contains much of the same enthusiasm. It is especially readable at this time of the year, and every lover of garden plants will here find useful knowledge and pleasurable inspiration. The illustrations are delightful.

SONGS OF THE NATION. Compiled and Edited by Charles W. Johnson. New York City: Silver, Burdett and Company.

Patriotism is love of country, isn't it, and love of country is exactly what we are trying to inculcate and increase? Then certainly patriotic songs of a nation come within the scope of our efforts. We are grateful to the publishers for favoring us with a copy of this interesting music book for schools. It is not only adapted to schools but for community singing. The selections are well made.

GARDENING WITH BRAINS. By Henry T. Finck. New York City: Harper and Brothers.

A book on gardening not only for reference but for reading. It contains many important facts but pleasingly flavored with wise and witty remarks and spiced with anecdotes that will appeal to the garden maniac. Such a book would seem out of place at gardening time. It is too literary. It savors too much of the winter fireplace even in its appearance. It is hardly sedate enough to be a gardening manual. Yet it gives some of the most practical suggestions that I have seen although its spirit is that of gardening in the library and the easy-chair rather than with the fertilizing pail and the hoe.

DOWN THE COLUMBIA. By Lewis R. Freeman. New York City: Dodd, Mead & Company.

The author, who has tried nearly every known form of adventure in nearly every country of the world, for years had an ambition to voyage down the Columbia River from its source to its mouth. Curiously enough, although the Columbia is one of the world's great rivers, and perhaps the grandest, scenically, of any, there is no record that any man has ever made the complete journey from the glacial sources to tide-water. The Columbia runs through mountains nearly its full length, and there is no slack of water on the entire course where rapids are sometimes twenty miles long. For rocks, current, speed, volume of water and

for scenery, there is no river like it. Mr. Freeman's book describes his journey and his adventures, of which there were more than enough for an average man, and illustrates his trip with many wonderful photographs along the way.—Mrs. N. E. Britton, New York Botanical Garden.

A WOMAN'S HARDY GARDEN. By Helena Rutherford Ely. New York City: The Macmillan Company.

Published several years ago and many times read by the reviewer this book seems to improve on every reading as the reader's knowledge of its contents becomes more complete. It is packed with inspiring text and vivid illustrations. The author died several years ago, a keenly regretted fact. It would have been a delight to know her, to visit her garden and to share some of her enthusiasm. In view of her death soon after the book was written the final paragraph has especial significance:

"As a rule, young people do not care for gardening. They lack the necessary patience and perseverance. But in the years of middle life, when one's sun is slowly setting and interest in the world and society relaxes, the garden, with its changing bloom, grows ever dearer."

TRAILMAKERS OF THE NORTHWEST. By Paul Leland Haworth. New York City: Harcourt Brace & Company.

This is a book to be loved by all boys and girls and enjoyed by many adults. It is full of life and adventure. It is a story of the heroism and of the exploits which opened up our country. The demand for fur led to great discoveries. Accounts of the exploration of Radisson, Mackenzie's journeys to the Arctic and the Pacific, the discovery of Hudson Bay and the Great Lakes, the discovery of the Northwest Passage are here; accounts of the habits of beavers, buffaloes and other animals the explorers hunted, and stories of the Indians with whom they lived. The profusely illustrated pages breathe of courage, the exigencies of adventure and of primitive life. The final chapter tells about trappers in the Northwest today, their methods of trapping, and how the love of adventure and of the wilderness persists in them and how they too are trail-makers.—E. G. Britton, New York Botanical Garden.

WATCHED BY WILD ANIMALS. By Edos A. Mills. Garden City, New York: Doubleday, Page and Company.

This book is fully up to the author's usual high standard and acute observation. He is

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always interesting. He is familiar with the wilds. He says:

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He further tells us that animals use instinct and reason and have much curiosity—the desire to know. His experiences with the beaver, the skunk and the wolf are especially entertaining. His observations of animals in the winter not only interest and instruct but set us to thinking more deeply than ever.

Toes in Poetical Feet.

A tree toad loved a she toad

That lived in a tree;

She was a 3-toed tree toad,

But a 2-toed tree toad was he,

The 2-toed tree toad tried to win

The she toad's friendly nod;

For the 2-toed tree toad loved the ground

That the 3-toed tree toad trod;

But vainly the 2-toed tree toad tried—

He couldn't please her whim;

In her tree toad bower, with her V-toe power,

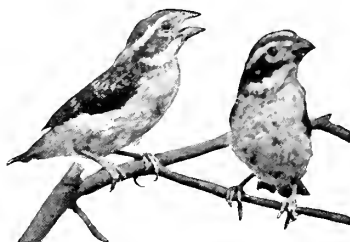
The she toad vetoed him.

—The Van Raalte Vanguard.

He Knew the Tree!

An artist from New York was visiting an old Southern family in Alabama. One day while they were riding in their automobile, which their former coachman, an old negro, was driving, the hostess pointed out a majestic tree that stood alone in a meadow. The artist

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went into raptures over it and with hands clasped turned to her hostess.

"Oh, isn't it superb!" she breathed. "A perfect example of a Corot!"

"Scuse me, mistis," said the privileged old servant. "Dat ain't no Corot. Hit's jest one of dese hyuh sugarberry trees."—The Youth's Companion.

Where They're Needed.

A large number of snakes have reached London from the New York Zoo. Now that the country is settling down to Prohibition, Americans can no longer bear to see them.—Punch (London).

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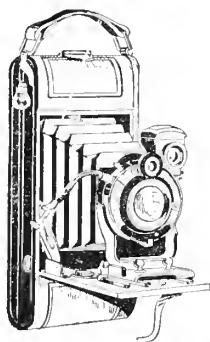
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